## Catcorp Pty Ltd C/- Future Urban Group

7 Storey mixed use building comprising of commercial/retail tenancies, residential apartments, ancillary car parking, landscaping and associated site works.

## 244-246 Unley Road, Unley – 090/M008/17

**TABLE OF CONTENTS**


| | PAGE NO |
|---|---|
| **AGENDA REPORT** | 2-14 |
| **ATTACHMENTS** | 15-496 |
| 1: PLANS | |
| a. Amended Plans | 15-66 |
| 2: APPLICATION DOCUMENTS | |
| a. Traffic Consultant additional advice | 67-70 |
| b. MRV turning path diagrams – Hart Avenue (existing and proposed) | 71-72 |
| c. Updated Waste management report | 73-91 |
| d. Stratavault – tree system information | 92-103 |
| 3: AGENCY COMMENTS | |
| a. ODASA Comments | 104-105 |
| b. Commissioner of Highways (DPTI) comments | 106-110 |
| 4: Council Comments | 111-114 |
| 5: Previous Application Documents | 115–496 |

## OVERVIEW

| | |
|---|---|
| **Application No** | 090/M008/17 |
| **Unique ID/KNET ID** | Appian 2397 2017/18253/01 |
| **Applicant** | Catcorp Pty Ltd C/- Future Urban Group |
| **Proposal** | Mixed use development comprising of commercial tenancies, residential apartments, ancillary car parking, landscaping and associated building works |
| **Subject Land** | 244-246 Unley, Road Unley |
| **Zone/Policy Area** | Urban Corridor Zone, High Street Policy Area |
| **Relevant Authority** | State Commission Assessment Panel |
| **Lodgement Date** | 14 August 2017 |
| **Council** | City of Unley |
| **Development Plan** | Unley (City) Development Plan [Consolidated 4th July 2017] |
| **Type of Development** | Merit |
| **Public Notification** | Category 2 |
| **Representations** | Nine (9) representations of which four (4) are valid, no representors wish to be heard. |
| **Referral Agencies** | Associate Government Architect and Commissioner of Highways (DPTI) |
| **Report Author** | Karl Woehle |
| **RECOMMENDATION** | Development Plan Consent subject to conditions |

## EXECUTIVE SUMMARY

This application involves the demolition of existing building structures and construction of a seven (7) storey mixed use building comprising of ground floor retail/offices, residential apartments, landscaping, ancillary car parking and associated building works at 244-246 Unley road, Unley. The assessment of the original proposed development is contained in the attachments and are still relevant to this deferred item.

On 25 January 2018 the State Commission Assessment Panel resolved to defer the proposal to enable further consideration for car parking, deep soil planting, waste management, proposed materials, public realm activation, apartment amenity, overlooking impacts and a review of the visual bulk and building height.

The refinements in all matters referenced in the Panel's deferral motion have been undertaken in consultation with the Associate Government Architect and the Department of Planning, Transport and Infrastructure. The proposed amendments are considered to improve the overall quality of the development application.

The amended proposal exhibits appropriate design and apartment amenity, which should provide a positive contribution to the locality. It is considered that the design strategies to manage the proposed height, bulk and overlooking issues have been dealt with appropriately. The proposed setback at ground along Hart Avenue and soft landscaping should provide a positive contribution to the public realm.

Overall the applicant has adequately addressed key planning, design and technical issues. It is acknowledged that the amended application appropriately addressed the issues of concern stated in the Panel's deferral motion. Accordingly, the application is deemed to warrant Development Plan Consent, subject to conditions.

**ASSESSMENT REPORT**

## 1. BACKGROUND

On 25 January 2018 the State Commission Assessment Panel considered Development Application 090/M008/17 and resolved:

> *To defer the proposal to enable further resolution of the following:*
>
> - *A review of the height of the development in the context of the planning policy and surrounding character of the area.*
> - *A review of overlooking impacts.*
> - *A review of the amenity of the south facing apartments and balconies in light of potential development to the south of the property.*
> - *A review of the visual bulk of the building.*
> - *Further examination of the finishes and materials proposed particularly on the podium.*
> - *A review of the parking provisions in light of the loss of available street parking arrangements on Hart Avenue, and the shortfall of carparks on site related to the provision of retail space.*
> - *A review of the Unley Road frontage and the Unley Road/Hart Avenue corner of the site to ensure feasible activation of the ground floor and public realm, especially as the outdoor dining area is unlikely to be supported by Council and DPTI Transport's requirement for a 4.5m by 4.5m corner cutoff, under the Metropolitan Road Widening Act.*
> - *Consideration of the inclusion of areas for deep rooted plantings on the development site.*
> - *An updated waste management plan.*
>
> *It is strongly suggested by the State Commission Assessment Panel that further engagement be made with ODASA to resolve some of the above matters.*

Following the deferral motion a following meeting was held with the applicant to discuss the deferral items in detail. A further meeting was facilitated with the Associate Government Architect and a representative of DPTI Transport Services in which preliminary plans were tabled as a response to the deferral items.

## 2. Assessment

The assessment information below is only considering the deferral motion and items presented in response to the deferral, all other assessment matters are contained in the original assessment report:

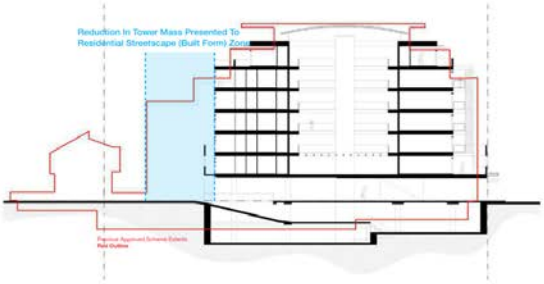
- **A review of the height of the development in the context of the planning policy and surrounding character of the area.**

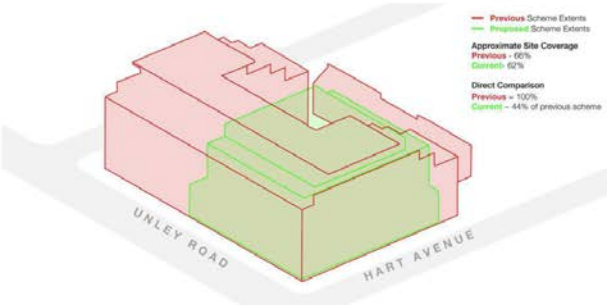
  The applicant provided a further detailed analysis in the form of cross sections and additional elevations to illustrate the potential impact the additional height may have within context.

  The height of the proposed development has not changed and is at odds with the maximum envisaged height of the High Street Policy Area. The provided cross sections illustrate that the upper levels of the proposed development are recessive in form when viewed from ground on Unley Road and Hart Avenue. The cross sections also illustrate that the substantive bulk of the building can be defined by the tower element which references a height closer to the 18.5 metre.

  It is also noted in the illustrations that the height and design of the podium references the built form and rhythm exhibited in the immediate locality. The

analysis also demonstrates that the bulk of the proposed development is contained within the footprint of the previous approved development scheme.




The Associate Government Architect is still concerned about the appropriateness of the proposed height, given the proposal is one of the first to be considered under the new policy setting for the area.

The design strategies incorporated within the proposed development exhibits an appropriate level of detail to reduce the perceived height of the building within the locality. Whist the proposed development exceeds the maximum envisaged height of the Policy Area it is not considered fatal to the application.

- **A review of overlooking impacts.**

The applicant reviewed the location and density of the façade screening devices as a response to the potential overlooking impacts. The revised screening devices are predominately reflected in the amended western elevations, it is also noted that the podium treatment is continued along the western edge.

The revised screening devices should encourage views to the northwest, whilst managing the potential negative impact a reduced outlook may have on apartment amenity. The podium treatment has been continued along the western façade of the development. As such views to the west from levels 1 and 2 are directed to the horizon rather than looking down towards the residential developments. It is also noted that views to the adjacent residential dwellings to the immediate west are further reduced with the proposed deep root planting area along the western boundary.

The Associate Government Architect has acknowledged that amendments have been made to improve vertical screens to reduce overlooking impacts.

The revised façade screening devices, extension of the podium, deep root planting area and the separation from the adjacent residential dwellings and the residential zone are considered appropriate and should mitigate potential overlooking impacts. The design strategies incorporated within the proposed development are considered consistent with the Development Plan provisions.

- **A review of the amenity of the south facing apartments and balconies in light of potential development to the south of the property.**

The south facing apartment balconies have been redesigned to reflect a 3 metre setback from the boundary. The façade screening devices adjoining the balconies have also been amended to encourage views to the east and west. The revised balconies have resulted in a reduced private open space, however it is considered that a 14 square metres balcony for a 2 bedroom apartment is acceptable and the shortfall in private open space is potentially offset by the communal space on level 1.

On balance the setback of the apartment balconies from the southern boundary is supported and should provide appropriate apartment amenity and separation from potential adjoining developments.

- **A review of the visual bulk of the building.**

  Additional information has been provided illustrating a breakdown of the proposed development's visual mass and articulation. Further visual breaks have been introduced to the eastern and western facades, resulting in a building that has been divided into four distinctive quadrants.

  The four quadrants provides the development a distinctive built form that breaks down the visual bulk and presents a level of articulation that is considered conservative but appropriate for the locality.

  The Associate Government Architect acknowledges that improvements have been made in relations to the visual breaks in the podium on the Unley Road, Hart Avenue and western elevations.

  On balance the additional visual breaks in the built form reduces the visual bulk of the building and is considered suitable for the locality.

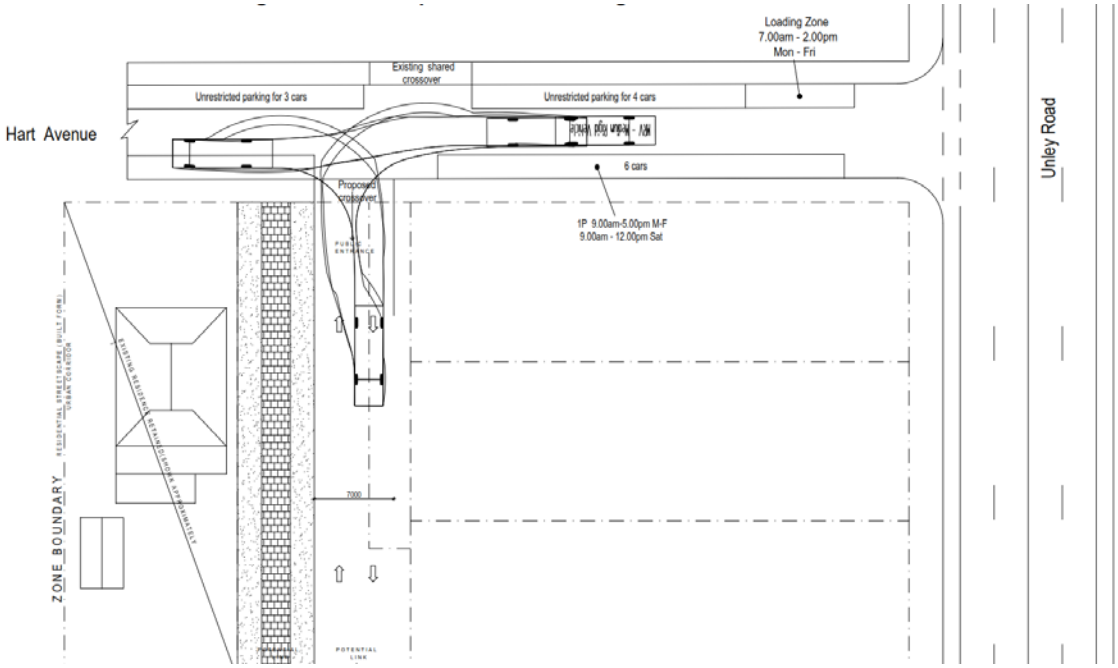
- **Further examination of the finishes and materials proposed particularly on the podium.**

  A revised materials board has been provided, the podium stone has been changed to better match the NAB building which is a Local Heritage Building. On balance the proposed materials appropriately responds to the fine grain materials within the immediate locality.

- **A review of the parking provisions in light of the loss of available street parking arrangements on Hart Avenue, and the shortfall of carparks on site related to the provision of retail space.**

  The applicant engaged their traffic consultant to review the impact the proposed development may have on the available on-street parking within Hart Avenue. The traffic consultant clarified that there is no loss of street parking on Hart Avenue as a result of the proposed development and that an additional car park will be gained. The applicant provided a figure illustrating the swept paths of the Waste Collection Vehicles (MRV) within Hart Avenue. The vehicle potentially uses two on-street spaces to the immediate west of the proposed access point to undertake the manoeuvre, however the traffic consultant noted that these carparks could be appropriately signed to coincide with the scheduled waste collection to ensure minimal impact to the on-street parking.

  Council are of the view that there is a need to reconfigure the on-street parking for Hart Avenue to ensure safe and appropriate traffic movements. This could result in the removal of parking on the southern side of Hart Avenue. Council noted the removal of the on-street parking could further compound the shortfall of the on-site parking.




**Proposed parking conditions and swept paths for MRV movements on Hart Avenue**

The updated car parking summary below:

| Land Use | Car Parking Provided | Development Plan Requirement |
|---|---|---|
| Residential Apartments | 60 spaces (basement levels) | 66 spaces |
| Residential Visitors | Proposed to be shared with non-residential at ground level | 15 spaces |
| Non-Residential (616sqm) | 18 spaces (ground level) | 18.4 spaces |

The amended plans provide an additional carpark in the basement and the reduced commercial space has resulted in an improved car parking ratio. The applicant clarified that 6 one-bedroom apartments will not be provided with a car spaces. It is acknowledged that the Development Plan, contemplates a lesser parking provision when the non-residential and residential components of the development are complementary, which is applicable in this instance.

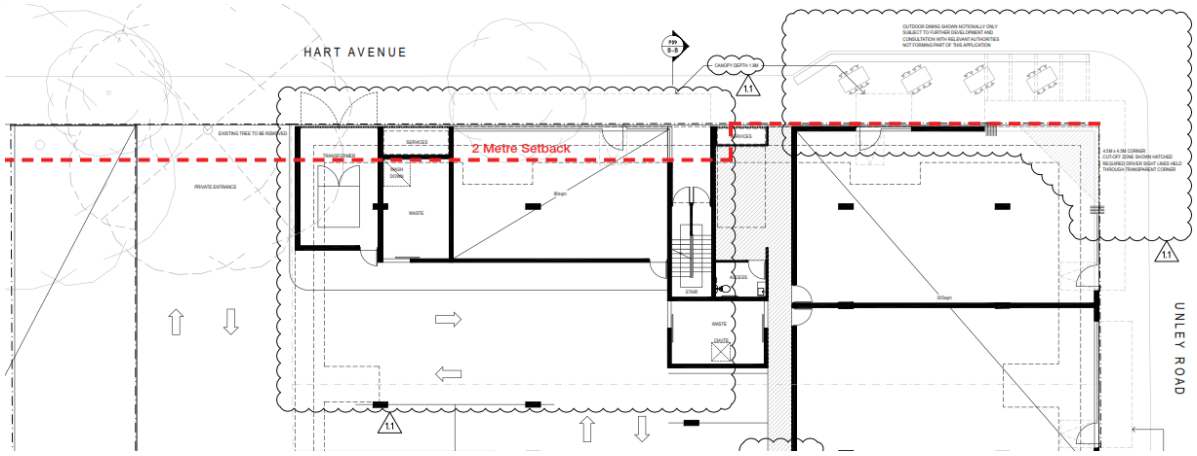
It is acknowledged that Council have a preference to remove car parking on the southern side of Hart Avenue to provide safer turns into the street. It is also noted that the development does not directly reduce the number of on-street car parks and endeavours to provide an additional link between Hart Avenue and Opey Avenue which could relieve potential traffic movements within the locality.

The revised parking requirements in lieu of the reduced commercial space and the additional car parking has improved the car parking ratio of the proposed development. On balance the revised car parking provisions is an improvement on the previous scheme and should not detrimentally impact the immediate locality.

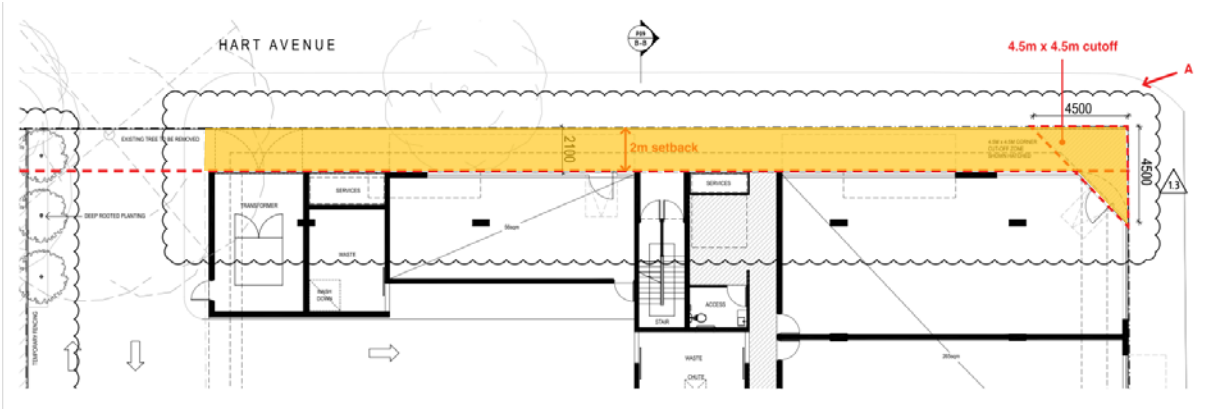
- **A review of the Unley Road frontage and the Unley Road / Hart Avenue corner of the site to ensure feasible activation of the ground floor and public realm, especially as the outdoor dining area is unlikely to be supported by Council and DPTI Transport's requirement for a 4.5m by 4.5m corner cut-off, under the Metropolitan Road Widening Act.**

  The proposed development has been setback 2.1m along Hart Avenue which is over and above the Development Plan provisions. The setback provides a widened footpath along Hart Avenue and the opportunity for the development to further activate the ground floor and public realm.

  In consultation with DPTI Traffic Operations the proposal appropriately adopts a 4.5mx4.5m cut off at ground and a 3mx3m cut-off in the basement and level one up. DPTI Traffic Operations are satisfied the proposed development appropriately address the corner of Unley Road and Hart Avenue and have provided conditions to apply to the development.




**Original proposal - before**




**Amended proposal – 2.1m setback along Hart Avenue and 4.5mx4.5m cutoff**

- **Consideration of the inclusion of areas for deep rooted plantings on the development site.**

  The proposal includes deep root planting in the form of Magnoilia grandiflora Alta along the western boundary. Citygreen Strata-vault tree pits has been proposed to extend beneath the laneway and should ensure the tree root system has sufficient soil volume.

  The deep root planting provides additional screening to the adjacent residential dwellings. Council support the inclusion of the deep soil planting, however there is a preference for a more robust and fuller canopy species. A condition is recommended requiring final landscaping plans and details are provided to ensure the appropriate landscaping is applied during detailed design development.

- **Waste** – An updated waste management plan has been provided reflecting the minor changes to the pathway between the waste chute and waste room. It is noted that waste stored in the chute rooms on ground will be transferred to the waste collection room by Building Services.

## 3. STATUTORY REFERRAL BODY COMMENTS

Referral responses are contained in the ATTACHMENTS.

### 3.1 Government Architect

The Associate Government Architect was consulted on the amened application and acknowledges the design amendments made to address some of the concerns.

These amendments include;

- 2.1 metre setback to Hart Avenue.
- Reconfiguration of the south facing balconies to provide sufficient separation and futureproof the balconies from a potential adjoining development.
- Finishes and materials sample board has been provided.

In addition, there was further acknowledgement that the following improvements have been made.

- Provision of visual breaks in the podium on the Unley Road, Hart Avenue and western elevations.
- Review of vertical screens to balconies to direct viewing angles and reduce overlooking impacts.

On the whole, the Associate Government Architect supports the amendments proposed, however there remains concerns about the appropriateness of the proposed height. The Associate Government Architect is of the opinion that the proposed height is inconsistent with the envisaged future character of the locality.

A copy of the comments provided on the Associate Government Architect's behalf is included in the **ATTACHMENTS.**

### 3.2 Commissioner of Highways [Department of Planning, Transport and Infrastructure (Traffic Operations)]

Traffic Operations reviewed the proposed 4.5metre x 4.5metre cut-off at the Unley Road/ Hart Avenue Corner and the 3.0metres x 3.0 metres cut-off at the basement and above ground level. The Department also noted the amended plan provides a 2.1 metres along Hart Avenue, however there is a preference for a 2.1 metres setback along Unley Road.

In-principle the proposed setbacks are supported and does not raise any objections to the proposed development. Traffic Operations provided eight (8) planning conditions that were recommend to be attached to any planning consent.

A copy of the comments provided by Traffic Operations is included in the **ATTACHMENTS.**

## 4. COUNCIL TECHNICAL ADVICE

### 4.1 City of Unley

For information purposes the proposed amendments were provided to Council. Council provided the following comments:

- Proposed height is unchanged and still at odds with the maximum envisaged height.
- Building setback of 2.1 metres from Hart Avenue provides relief, however no landscaping opportunities have been indicated. Further upper levels have not changed, leaving them in line with the podium, reducing a desired relief and articulation of the building mass.
- Outdoor dining is not indicated and assumed it may be intended to be contained within the site.
- The additional consideration and vine covered selective vertical screening panels is positive and may encourage oblique views in some cases but still leaves extensive open viewing opportunities.
    - Limited height and width of proposed trees in rear driveway limit any effect on higher levels views.
- The commercial floor area is reduced, however proposed development still present a shortfall in car parking.
- Council noted there might be a need to reconfigure the on-street parking for Hart Avenue for safe and appropriate traffic movements.
    - Which could result in a net loss of 8 spaces (half of that available along the adjacent street frontages). The removal of parking on the southern side of the street is preferred to provide for safer left turns into Hart Avenue.
    - Such loss of on-street parking reinforces the critical need for at least the minimum required parking on-site
- The addition of a number of medium scale trees along the western edge of the rear main driveway is positive but of limited effect. A fully resolved comprehensive and softening site landscaping proposal is lacking.
    - Tree species / form selection is queried and a more robust and fuller canopy species and number would be suggested as preferable.
- The nature of the large scale mixed use development broadly accords with the Urban Corridor Zone intent.

Council provided seven (7) planning conditions that were recommended to be attached to any planning consent.

A copy of the comments provided by Council is included in the **ATTACHMENTS.**

## 5. CONCLUSION

The applicant has presented a series of amendments and additional information to the original proposal. The refinements in all matters referenced in the Panel's deferral motion have been undertaken in consultation with the Associate Government Architect and the Department of Planning, Transport and Infrastructure. The proposed amendments are considered to improve the overall quality of the development application.

Whilst the proposed development still exceeds the maximum envisaged height of the policy area it is considered that the amended application exhibits appropriate design measures to reduce the perceived height of the development. It is acknowledged that the current proposal reflects a reduction in bulk and scale to the previously approved development scheme. The development exhibits a podium and materiality that references the immediate locality. It is also noted that the tower element has been broken into four quadrants which aids in breaking down the perceived visual bulk of the building. The resulting architectural expression is contemporary in nature and the articulation is considered conservative but appropriate for the locality.

The proposed 2.1 metre setback along Hart Avenue coupled with the deep root planting is considered to provide a positive contribution to the locality and is consistent with the Development Plan. The amended screening devices and 3 metre setback of the balconies on the southern boundary are considered appropriate and should provide sufficient separation from adjacent developments whilst reducing opportunities for direct overlooking.

The revised on-site car parking has resulted in an additional carpark in the basement and the reduction in commercial tenancy has improved the car parking ratio. The traffic consultant noted that the proposed development does not remove any on-street carparks, however Council are of the view that on-street parking on the southern side of Hart Avenue should be remove to ensure safe access.

The proposal appropriately adopts a 4.5mx4.5m cut off at ground and a 3mx3m cut off in the basement and level one up, satisfying DPTI Traffic Operations requirements.

Whilst the Associate Government Architect remains concerned about the proposed height, it is noted on the whole there is support for the proposed amendments.

The amended application is considered to display sufficient merit when assessed against the Unley Council Development Plan and warrants Development Plan Consent, subject to conditions.

## 6. RECOMMENDATION

It is recommended that the State Commission Assessment Panel:

1) RESOLVE that the proposed development is NOT seriously at variance with the policies in the Development Plan.

2) RESOLVE that the State Commission Assessment Panel is satisfied that the proposal generally accords with the related Objectives and Principles of Development Control of the Unley [City] Development Plan.

3) RESOLVE to grant Development Plan Consent to the proposal by Catcorp Pty Ltd for DA 090/M008/17 at 244-246 Unley Road, Unley subject to the following conditions of consent.

## PLANNING CONDITIONS

1. That except where minor amendments may be required by other relevant Acts, or by conditions imposed by this application, the development shall be established in strict accordance with the details and following plans submitted in Development Application No 090/M008/17.

| Drawing Title | Drawing No. | Rev. | Date |
|---|---|---|---|
| Context Plan | P00 - C | 1.1 | February 2018 |
| Floor Plan | P01 | 1.3 | February 2018 |
| Floor Plan | P02 | 1.2 | February 2018 |
| Floor Plan | P03 | 1.1 | February 2018 |
| Floor Plan | P04 | 1.1 | February 2018 |
| Floor Plan | P04A | 1.0 | February 2018 |
| Floor Plan | P05 | 1.3 | February 2018 |
| Floor Plan | P06 | 1.1 | February 2018 |
| Floor Plan | P07 | 1.1 | February 2018 |
| Section | P08 | 1.4 | February 2018 |
| Section | P09 | 1.4 | February 2018 |
| Elevations | P10 | 1.4 | February 2018 |
| Elevations | P11 | 1.3 | February 2018 |

**Reports / Correspondence**

- Planning Statement by Future Urban Group dated 2 August 2017
- 246 Unley Road Landscape Concept Design by Hassell dated 5 July 2017
- Traffic and Parking Assessment by Phil Weaver & Associates dated 20 July 2017
- Waste Management Plan Revised by Rawtec Pty Ltd dated March 2018
- Building Services Design Report by Lucid Consulting dated 7 July 2017
- ESD Report by $D^2$ dated 2 August 2017
- Stormwater Management Report by Structural Systems dated 7 July 2017
- Acoustic Design Advice by Resonate Acoustics date 30 June 2017
- Response to reps, Council and ODASA by Future Urban Group dated 19 December 2017

2. Prior to Development Approval for superstructure works, the applicant shall submit a final detailed schedule of external materials and the screening devices for the air-conditioning units on balconies in consultation with the Associate Government Architect to the reasonable satisfaction of the State Commission Assessment Panel.

3. All vehicle car parks, driveways and vehicle entry and manoeuvring areas shall be designed and constructed in accordance with Australian Standards (AS/NZS 2890.1:2004 and AS/NZS 2890.6.2009) and be constructed, drained and paved with bitumen, concrete or paving bricks in accordance with sound engineering practice and appropriately line marked to the reasonable satisfaction of the SCAP prior to the occupation or use of the development.

4. All bicycle parks shall be designed and constructed in accordance with Australian Standard 2890.3-2015.

5. The recommendations detailed in the Traffic and Parking Assessment, dated 20 July 2017 by Phil Weaver & Associates, forming part of this consent shall be fully incorporated into the development to the reasonable satisfaction of the SCAP. Such measures shall be made operational prior to the occupation or use of the development.

6. A detailed landscaping plan shall be submitted to the reasonable satisfaction of the SCAP prior to Building Rules Consent being granted for superstructure works. This shall identify planting medium depths, irrigation methods and other features of the landscaping scheme to demonstrate viability of all plantings and lawn. The updated detailed landscaping plan shall be reflected, as necessary, in all other relevant plans and drawings (including, for example, sectional drawings).

7. Landscaping shown on the approved plans shall be established prior to the operation of the development and shall be maintained and nurtured at all times with any diseased or dying plants being replaced.

8. All external lighting on the site shall be designed and constructed to conform to Australian Standard (AS 4282-1997).

9. All stormwater design and construction shall be in accordance with Australian Standard AS/NZS 3500.3:2015 (Part 3) to ensure that stormwater does not adversely affect any adjoining property or public road.

10. A proprietary stormwater treatment device (i.e. Gross Pollutant Trap) shall be installed within the carpark in accordance with Council and EPA Water Quality Guidelines. This system shall be regularly inspected, cleaned and maintained in good working order, with gross pollutants, sediments, oil and grease removed by the facility operator (at regular intervals) for the life of the development.

11. Stormwater management on-site accords with submitted details with a maximum of 8 outlets distributed equi-distant along Unley Road and Hart Avenue frontages

12. The hours for waste collection vehicles to enter and exit the site shall be restricted to Monday to Friday: 7am to 5pm; with no collection on a Saturday or Sunday

13. The acoustic attenuation measures recommended in the Acoustic Design Advice, dated 30 June 2017 by Resonate Acoustics, shall be fully incorporated into the building rules documentation to the reasonable satisfaction of the SCAP. Such acoustic measures shall be made operational prior to the occupation or use of the development.

14. A Construction Environment Management Plan (CEMP) shall be prepared and implemented in accordance with current industry standards – including the EPA publications “Handbook for Pollution Avoidance on Commercial and Residential Building Sites – Second Edition” and, where applicable, “Environmental Management of On-site Remediation” – to minimise environmental harm and disturbance during construction.

**DPTI Traffic Operations conditions**

15. All canopies along the Unley Road frontage shall provide a minimum of 600mm setback from the back of kerb on Unley Road

16. A Traffic Management Plan for the construction period of the development shall be produced to the satisfaction of DPTI and Council prior to the commencement of construction. This plan shall detail the types, volumes and distribution of traffic and how they will be managed. All traffic movements shall be in accordance with this plan

17. Any excavation adjacent to roads shall be designed and undertaken in a manner that does not impact on the structural stability or safety of the roads. Any damage to road assets caused by the development shall be repaired to the satisfaction of the relevant road authority at the applicant’s cost.

18. All car parking and internal manoeuvring areas shall be in accordance with AS/NZS 2890.1:2004 and 2890.6:2009

## ADVISORY NOTES

a. This Development Plan Consent will expire after 12 months from the date of this Notification, unless final Development Approval from Council has been received within that period or this Consent has been extended by the State Commission Assessment Panel.

b. The applicant is also advised that any act or work authorised or required by this Notification must be substantially commenced within 1 year of the final Development Approval issued by Council and substantially completed within 3 years of the date of final Development Approval issued by Council, unless that Development Approval is extended by the Council.

c. The applicant has a right of appeal against the conditions which have been imposed on this Development Plan Consent. Such an appeal must be lodged at the Environment, Resources and Development Court within two months from the day of receiving this notice or such longer time as the Court may allow. The applicant is asked to contact the Court if wishing to appeal. The Court is located in the Sir Samuel Way Building, Victoria Square, Adelaide, (telephone number 8204 0289).

d. Due consideration should be given to the residential context of the subject site. In particular, consideration should be given to management of noise associated with patron behaviour, vehicle movements etc outside of normal operating business hours.

e. The Unley (City) Council has advised that an authorisation may be required under Section 221 of the Local Government Act 1999 for the encroachment of your structure or building in, on, across, under or over the public road. Please note that the council may charge an annual fee and that the authorisation may be issued on an annual basis for any encroachment that attracts such a fee. The council may also require any unauthorised encroachments to be removed.

f. Development Approval will not be granted by Unley (City) Council until Building Rules Consent and/or Encroachment Consent under the Development Act 1993 have been obtained. The Unley Council has advised that a separate application must be submitted for such consents. No building work or change of building classification is permitted until the Development Approval has been obtained.

g. All Council, utility or state-agency maintained infrastructure (i.e. roads, kerbs, drains, crossovers, footpaths etc.) that is demolished, altered, removed or damaged during the construction of the development shall be reinstated to Council, utility or state agency specifications. All costs associated with these works shall be met by the proponent.

h. Any proposed works with the public realm adjacent to the site, including the installation of street furniture, bicycle parking infrastructure and planting of street trees shall be undertaken in consultation with Unley (City) Council.

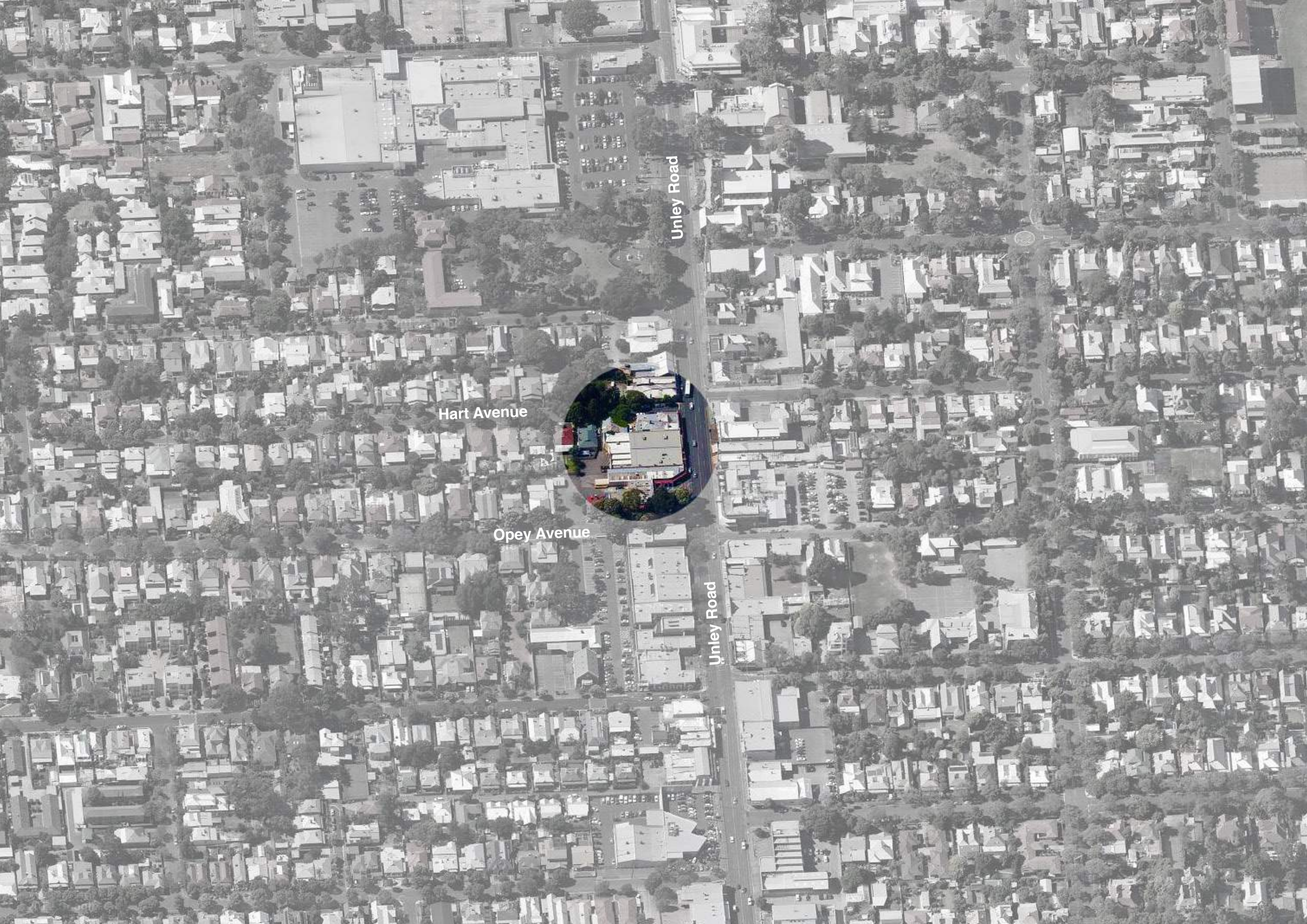
## DPTI Traffic Operations Advisory Notes

i. The subject site is affected by a requirement shown on the Metropolitan Adelaide Road Widening Plan (MARWP) for a 4.5 metres x 4.5metres cut-off at the Unley Road / Hart Avenue corner of this site for possible future road purposes. The consent of the Commissioner of Highways under the Metropolitan Adelaide Road Widening Plan Act is required to all new building works located on or within 6.0 metres of the possible requirement.

**Karl Woehle**
**Planning Officer**
**DEVELOPMENT DIVISION**
**DEPARTMENT OF PLANNING, TRANSPORT and INFRASTRUCTURE**
**INFRASTRUCTURE**

# 246 Unley Road

2018.02.27 **Compiled Report**


Unley Road
Hart Avenue
Opey Avenue
Unley Road

# Response To SCAP

## HEIGHT

### A review of the height of the development in the context of the planning policy and surrounding character of the area

A more substantial proposal was previously approved for the site.

The current proposal reflects approximately a 60% reduction in footprint and sits almost entirely within the envelope of the previously approved development.

**Refer Pages 4 & 5**

## OVERLOOKING

### A review of overlooking impacts

In addition to the already substantial distance between the proposal and neighbouring private open space, an adjustment to the location and density of facade screening devices has further reduced opportunities for direct overlooking.

**Refer Page 6**

## AMENITY

### A review of the amenity of the south facing apartments and balconies in light of potential development of the south of the property

In consultation with the Associate Government Architect a further setback has been given to the south facing apartments, **exceeding** the minimum National Construction Code requirements for natural light.

Balconies have increased in size and their revised orientation further promote views towards the east and west.

**Refer Page 7**

## BULK

### A review of the visual bulk of the building

A highly figured breakdown of the proposal's mass is demonstrated, each component highlighted expressing the building's articulation and hierarchy.

In consultation with the Associate Government Architect, further visual breaks have been introduced to the eastern and western facades in addition to the already existing breaks to the northern and southern facades through the proposed stairs.

**Refer Pages 8 & 9**

## MATERIALS

### Further examination of the finishes and materials proposed particularly on the podium

A further materials board is provided demonstrating, in detail, external material selections of high quality and integrity.

In consultation with the Associate Government Architect the podium stone has been changed to better match the local heritage item nearby (NAB building).

**Refer 10**

## CARPARKING

### A review of carparks of the parking provisions in light of the loss of available street parking arrangements on Hart Avenue, and the shortfall of carparks on site related to the provision of retail space

There exists no loss of available street parking on Hart Avenue with a parking space (1 car) gained through the removal of an existing crossover.

Additional carparks have been provided in the basement (1 car) and with the additional setbacks (see below) the car parking ratio has improved with the reduction in commercial space.

**Refer Page 11**

## SETBACKS

### A review of Unley Road frontage and the Unley Road / Hart Avenue corner of the site to ensure feasible activation of the ground floor and public realm, especially as the outdoor dining area is unlikely to be supported by Council and DPTI Transport's requirement for a 4.5m by 4.5m corner cutoff, under the Metropolitan Road Widening Act

The proposal adopts a 2m setback along Hart Avenue in accordance with the Development Plan resulting in a deepened footpath to ensure feasible activation of the ground floor and public realm.

In consultation with DPTI the proposal adopts a 4.5m x 4.5m cutoff which includes a cutoff in the basement and podium above.

**Refer Page 12**

## PLANTING

### Consideration of the inclusion of areas for deep rooted plantings on the development site

The inclusion of deep rooted planting and retaining of existing trees within the site has been adopted.

Mature trees also further assist in mitigating the potential for overlooking to the west.

**Refer Page 13**

## WASTE

### An updated waste management plan

An updated Waste Management Plan accompanies this report.

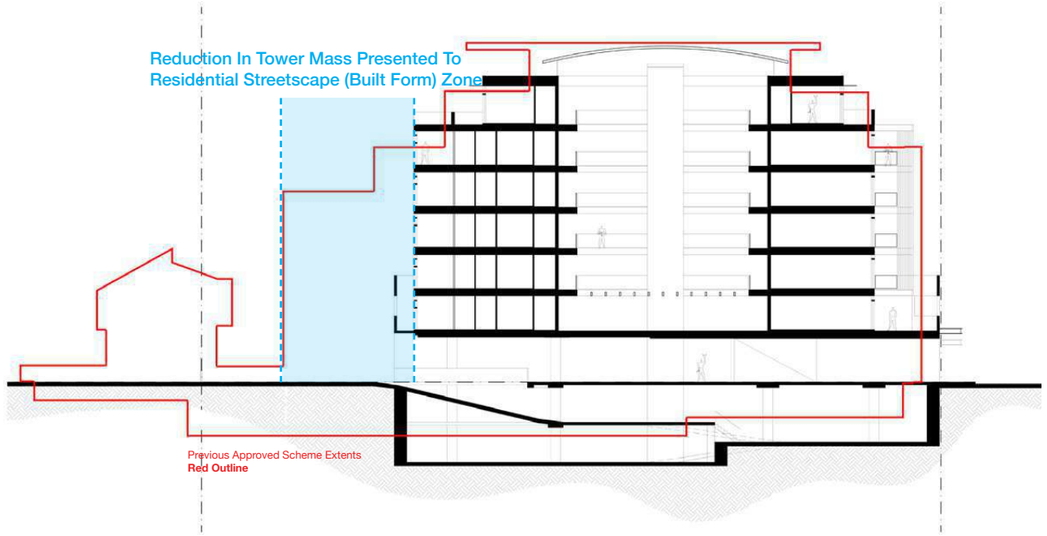
**Refer updated Waste Management Plan by Rawtec dated February 2018**

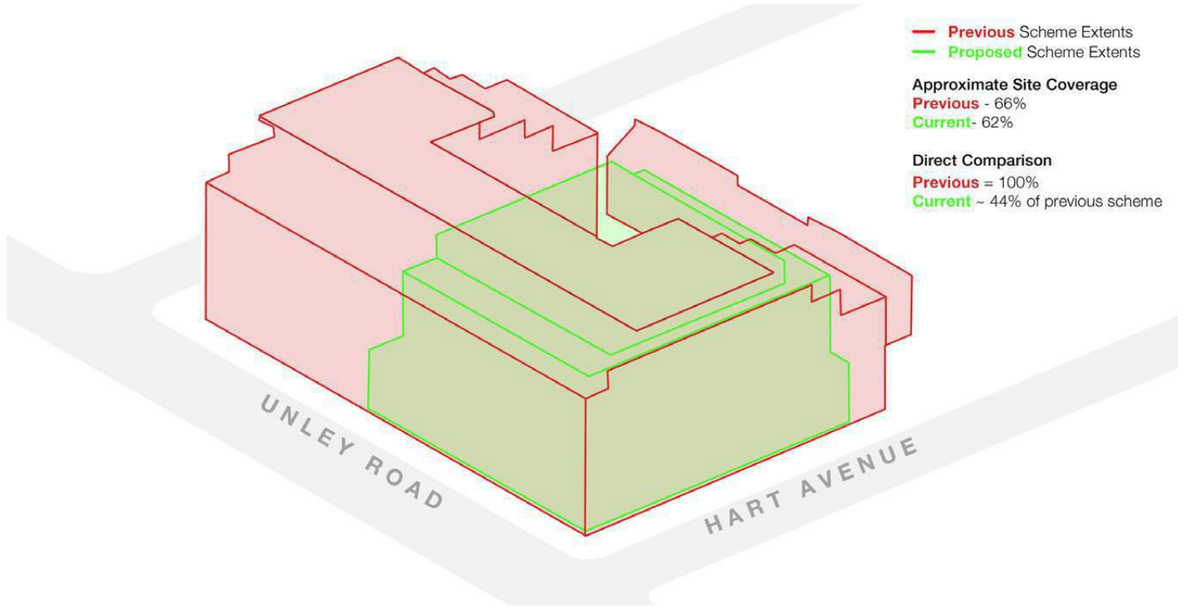
# HEIGHT

**A review of the height of the development in the context of the planning policy and surrounding character of the area**

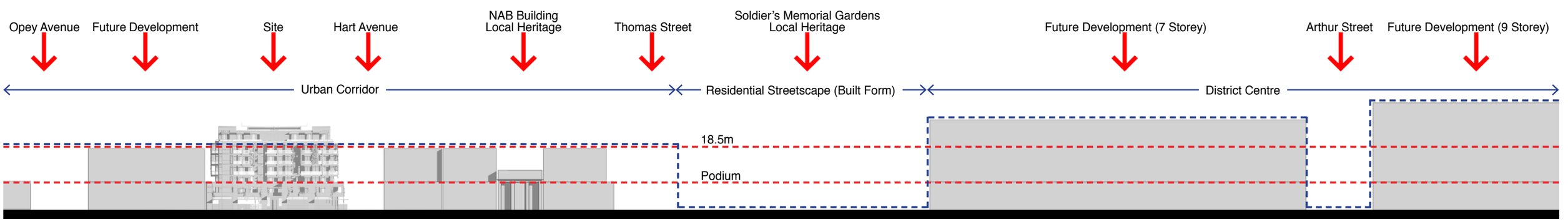
A more substantial proposal was previously approved for the site.

The current proposal reflects approximately a 60% reduction in footprint and sits almost entirely within the envelope of the previously approved development.



**Future Streetscape**




**Contextual Streetscape**

**A review of the height of the development in the context of the planning policy and surrounding character of the area**

A more substantial proposal was previously approved for the site.

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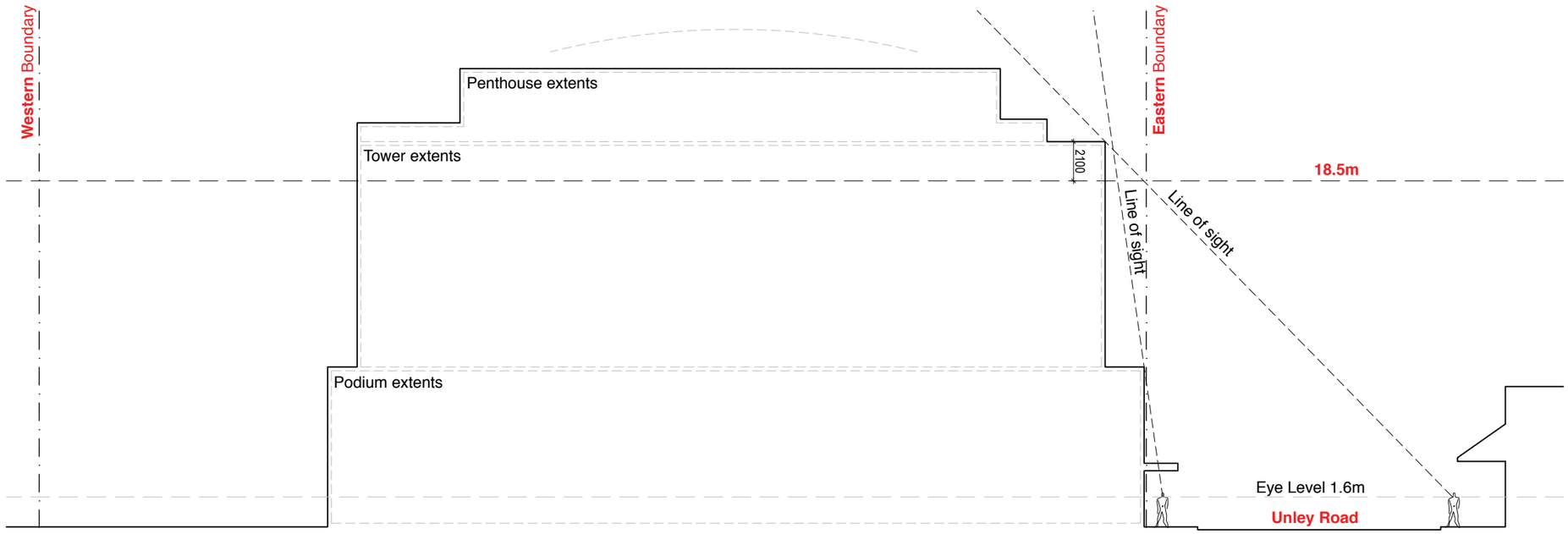
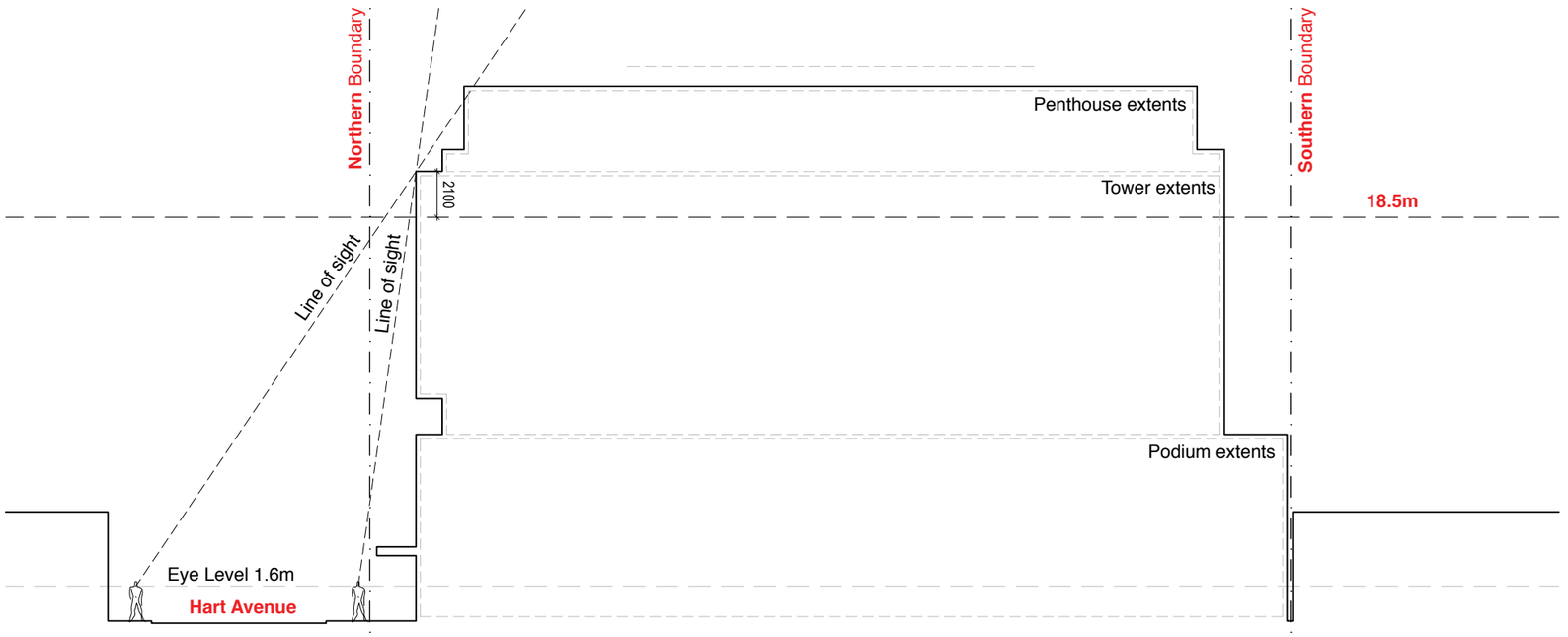



Visible Built Form **Unley Road**



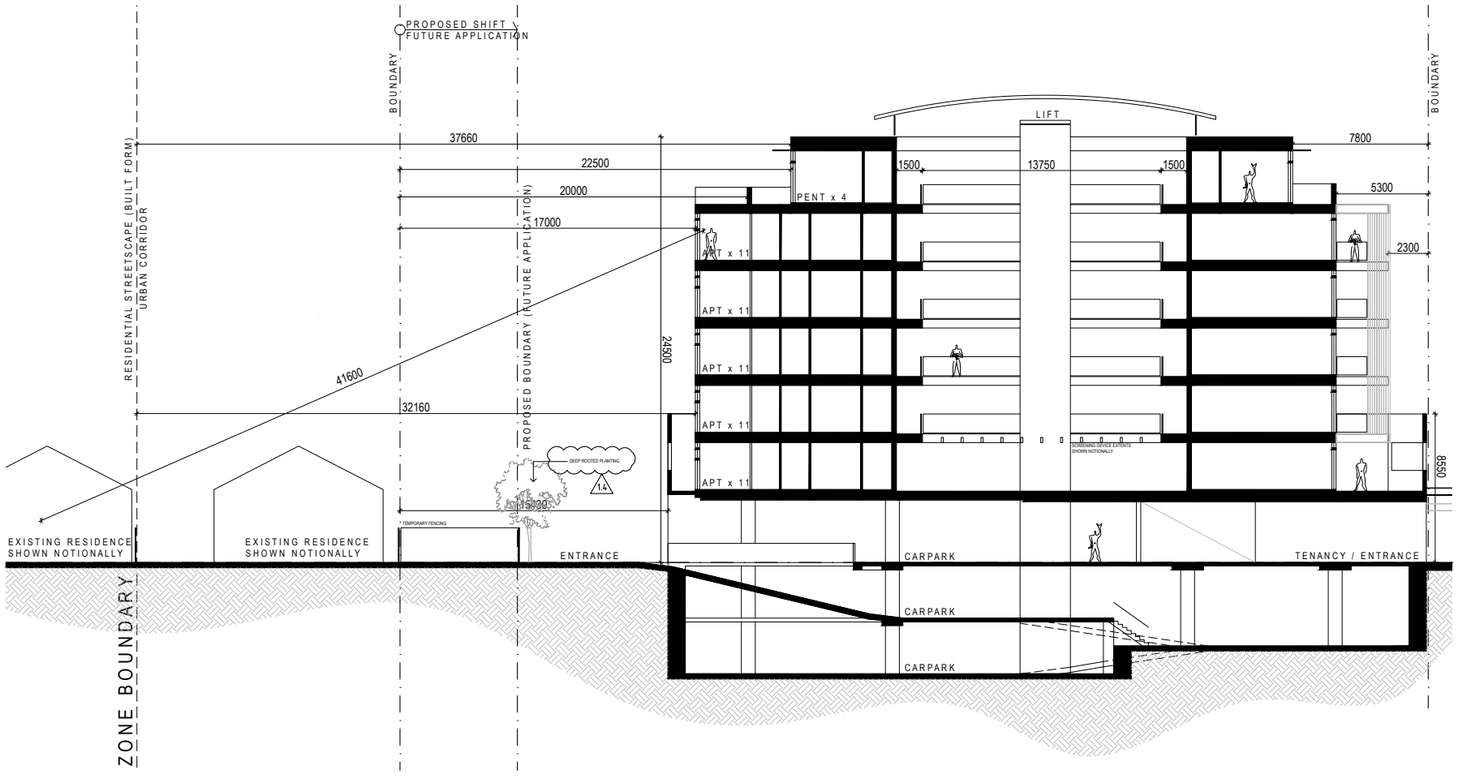

Visible Built Form **Hart Avenue**

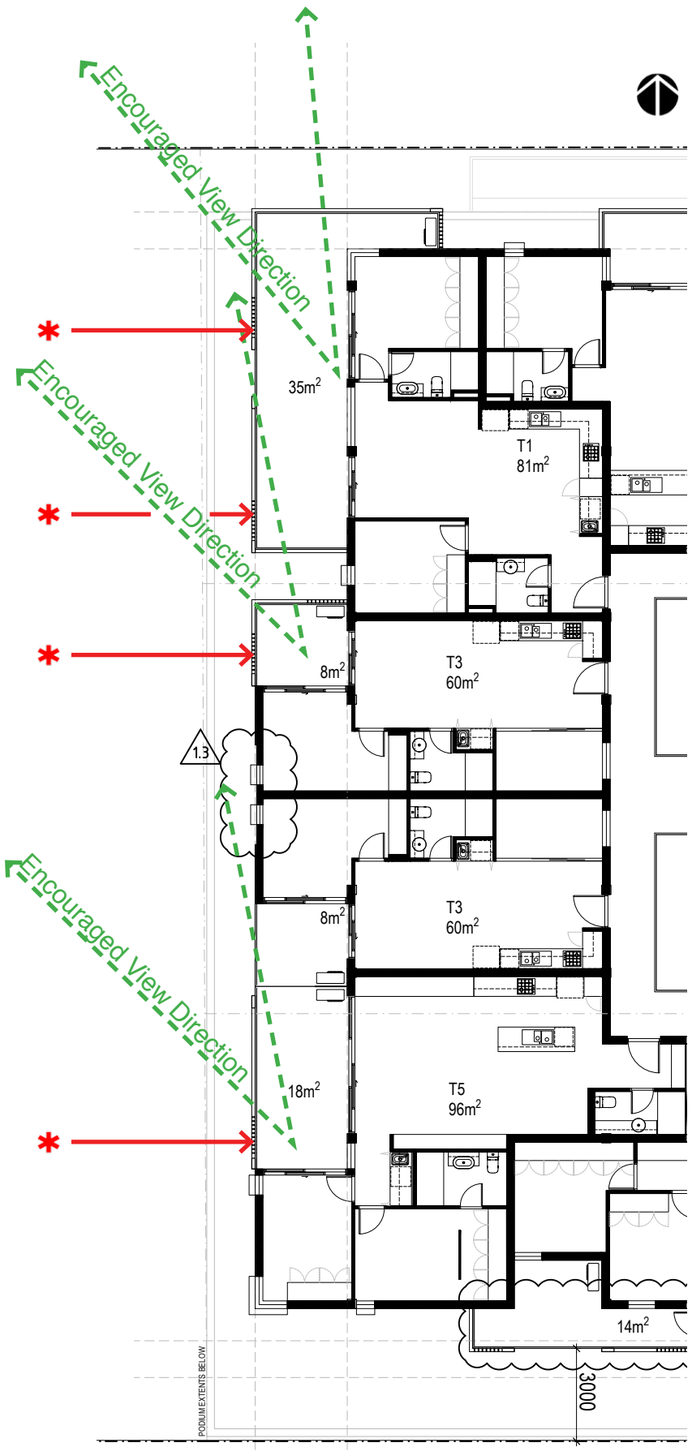
## A review of overlooking impacts

In addition to the already substantial distance between the proposal and neighbouring private open space, an adjustment to the location and density of facade screening devices has further reduced opportunities for direct overlooking.

# OVERLOOKING

**West Elevation**



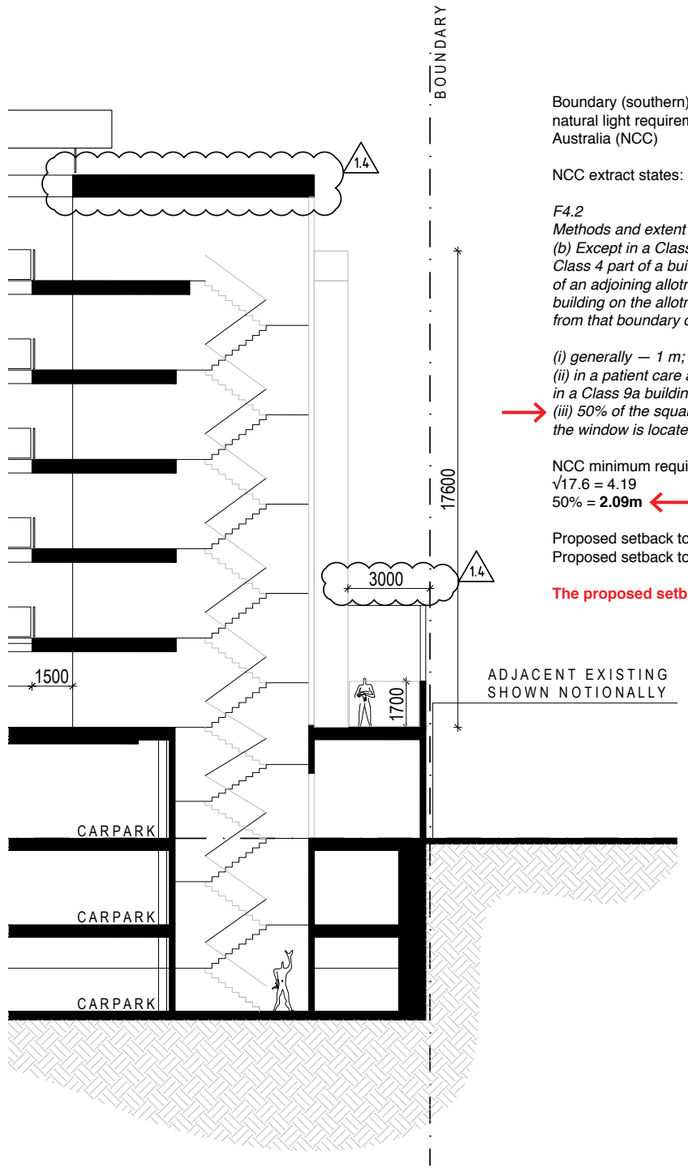




✱ Vertical screening

# AMENITY

**A review of the amenity of the south facing apartments and balconies in light of potential development of the south of the property**

In consultation with the Associate Government Architect a further setback has been given to the south facing apartments, **exceeding** the minimum National Construction Code requirements for natural light. Balconies have increased in size and their revised orientation further promote views towards the east and west.




Boundary (southern) setback complies and exceeds the minimum natural light requirements of the National Construction Code of Australia (NCC)

NCC extract states:

*F4.2*
*Methods and extent of natural light*
*(b) Except in a Class 9c building, in a Class 2, 3 or 9 building or Class 4 part of a building a required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must not be less than a horizontal distance from that boundary or wall that is the greater of—*

*(i) generally — 1 m; and*
*(ii) in a patient care area or other room used for sleeping purposes in a Class 9a building — 3 m; and*
*(iii) 50% of the square root of the exterior height of the wall in which the window is located, measured in metres from its sill.*

NCC minimum requirements
√17.6 = 4.19
50% = **2.09m**

Proposed setback to balcony edge - **3.0m**
Proposed setback to building face (window location) - **3.0m**

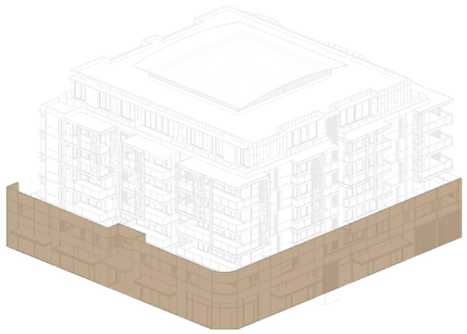
**The proposed setbacks exceed the minimum NCC requirement**

## A review of the visual bulk of the building

A highly figured breakdown of the proposal's mass is demonstrated, each component highlighted expressing the building's articulation and hierarchy.
In consultation with the Associate Government Architect, further visual breaks have been introduced to the eastern and western facades in addition to the already existing breaks to the northern and southern facades through the proposed stairs.

# BULK

**1**
podium

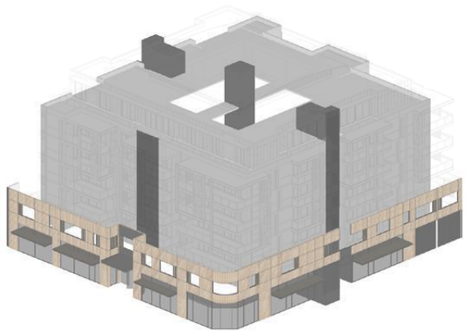


**+ 2**
openings

**+ 3**
canopies

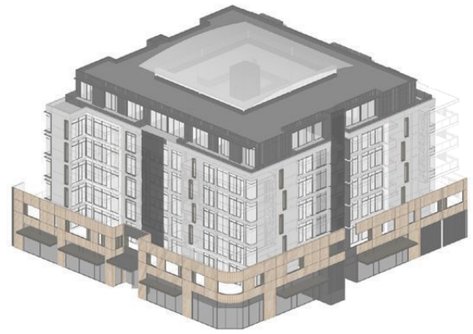
**+ 4**
stair

**+ 5**
tower



**+ 6**
openings

**+ 7**
penthouse



**+ 8**
balconies

**+ 9**
greenery

## A review of the visual bulk of the building

A highly figured breakdown of the proposal's mass is demonstrated, each component highlighted expressing the building's articulation and hierarchy.
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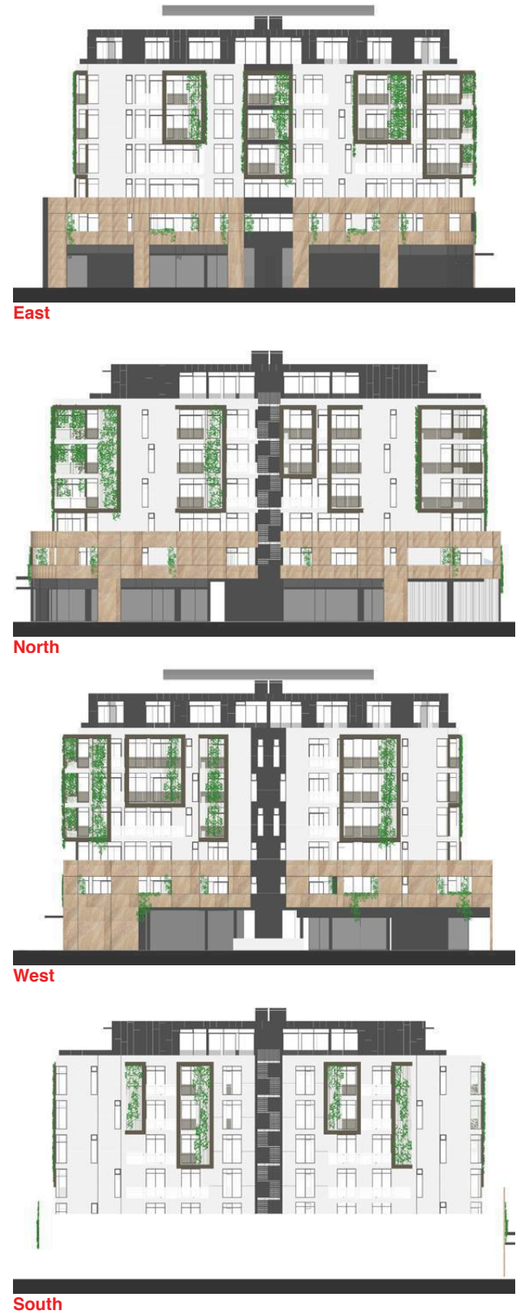
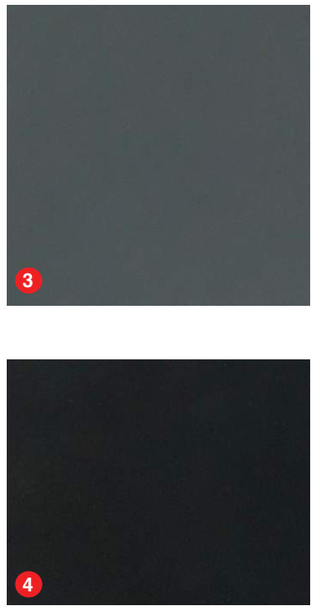
# BULK

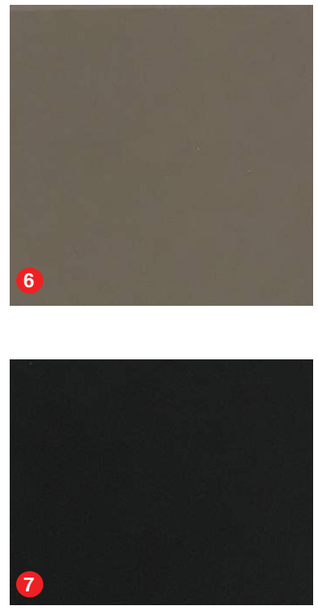


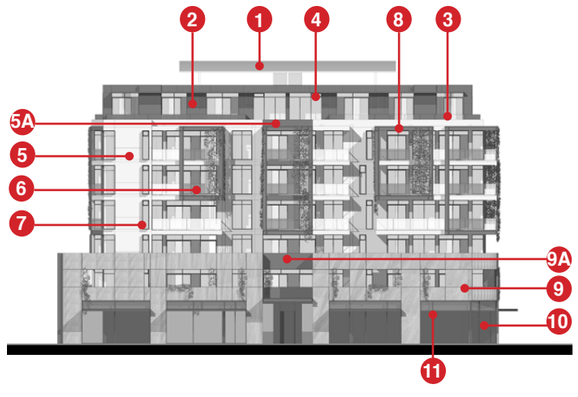
# MATERIALS

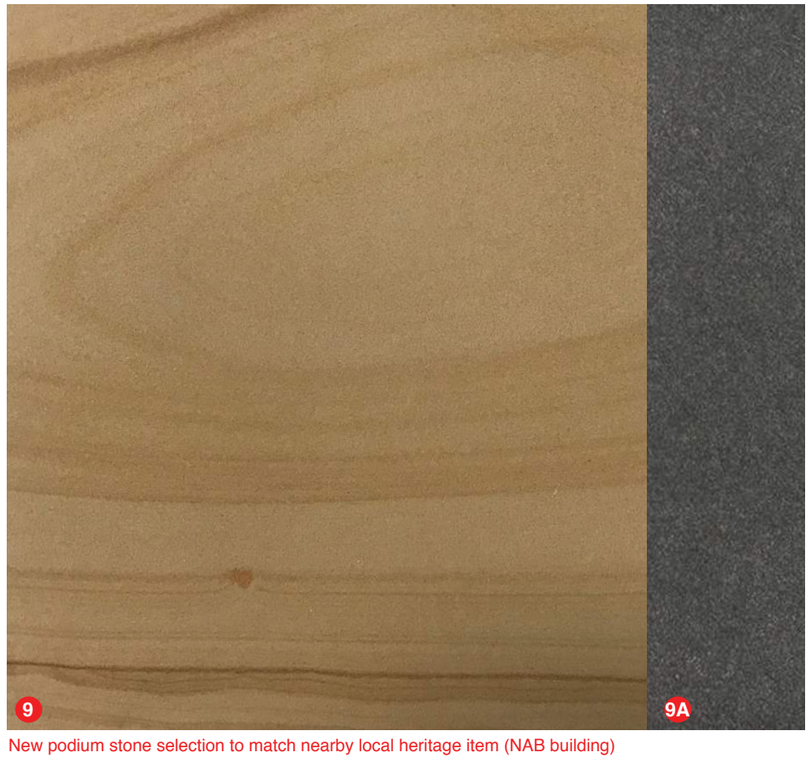
**Further examination of the finishes and materials proposed particularly on the podium**

A further materials board is provided demonstrating, in detail, external material selections of high quality and integrity.
In consultation with the Associate Government Architect the podium stone has been changed to better match the local heritage item nearby (NAB building).

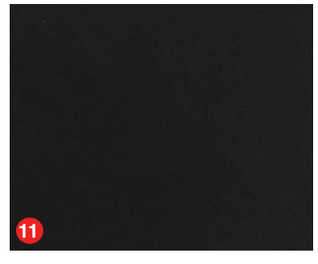







New podium stone selection to match nearby local heritage item (NAB building)




## MATERIAL LIST

### ROOF

1. Polycarbonate
Makrolon Multi UV - Grey

### PENTHOUSE

2. Wall
Colorbond - Basalt Matte

3. Glass
Viridian - VFloat Grey

4. Framing
Colorbond - Night Sky Matte

### TOWER

5. Wall
Bianco Precast - P4O1Q (W)

5A. Wall
Bianco Precast - P4O1Q (B)

6. Glass
Viridian - VFloat Bronze

7. Framing
Dulux Dark Bronze - 906-8184K

8. Treated Metal
Dulux - Spanish Eyes PG1F9

### PODIUM

9. Wall
All Stone - Sandstone 'Sand Dune'

9A. Wall
All Stone - Basalt 'Dawn Grey'

10. Glass
Viridian - VFloat Clear

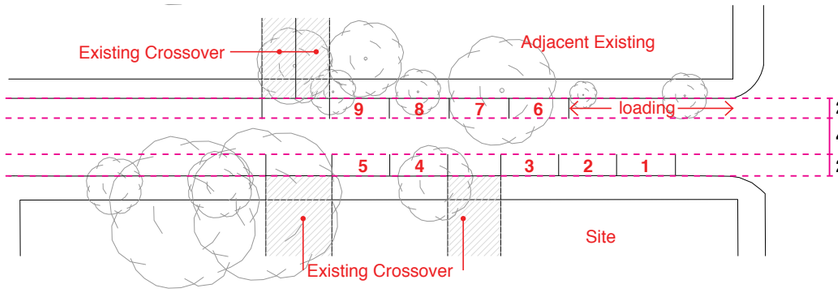
11. Framing
Dulux Dark Bronze - 906-8184K

Materials shown are indicative only

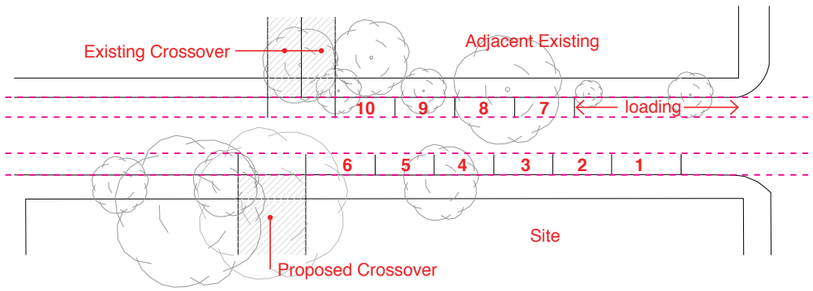
# CARPARKING

**A review of carparks of the parking provisions in light of the loss of available street parking arrangements on Hart Avenue, and the shortfall of carparks on site related to the provision of retail space**

There exists no loss of available street parking on Hart Avenue with a parking space (1 car) gained through the removal of an existing crossover.
Additional carparks have been provided in the basement (1 car) and with the additional setbacks (see below) the car parking ratio has improved with the reduction in commercial space.

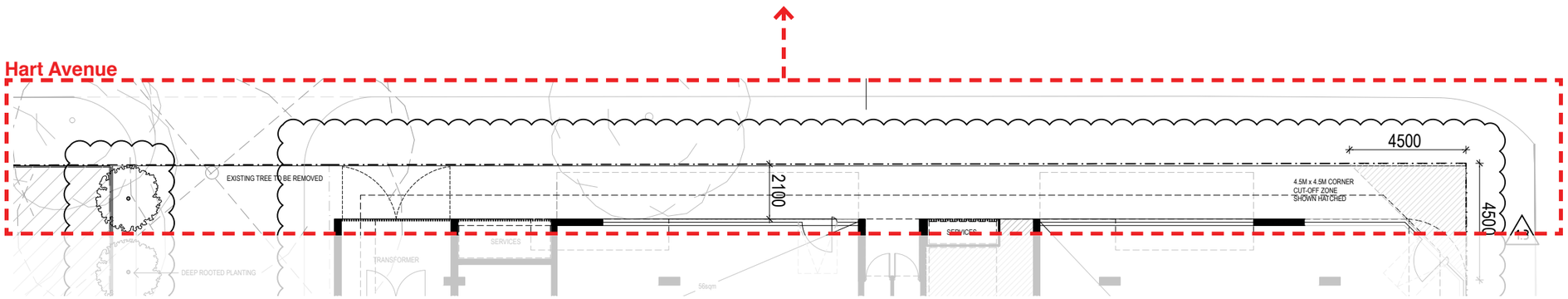


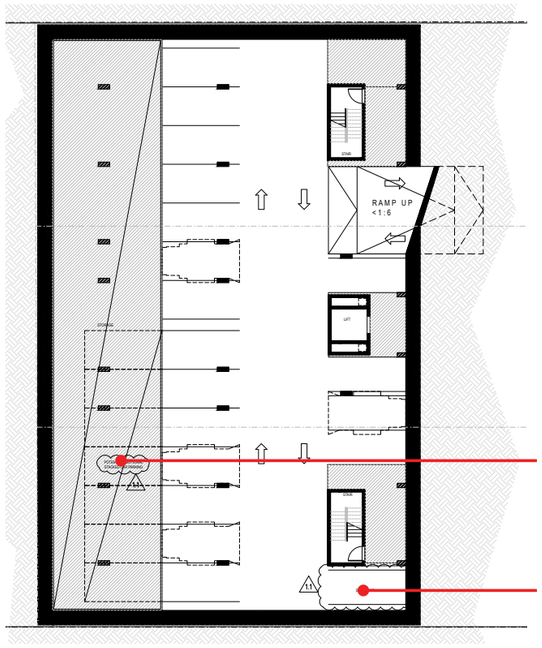

**Existing Configuration**




**Proposed Configuration**

**Hart Avenue**



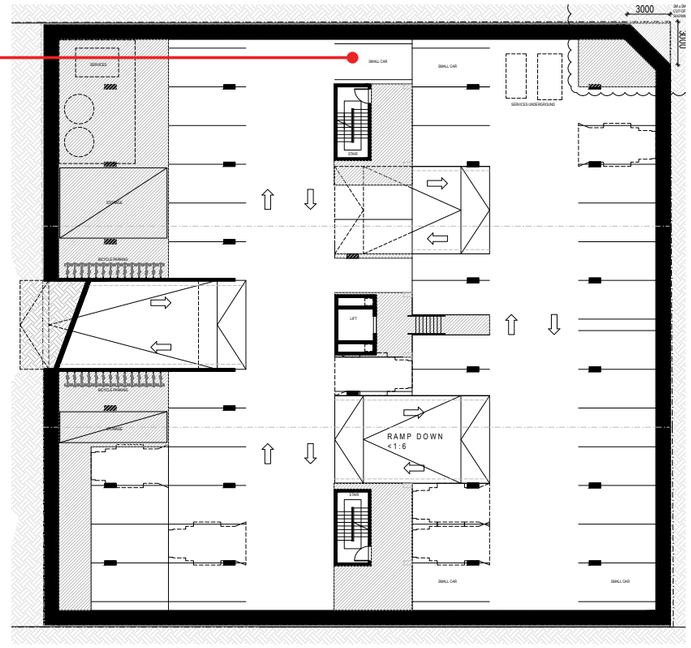




**Lower basement**

**Additional car park**

**Potential additional stacked car parks (dashed)**

**Additional car park**




**Basement**

# SETBACKS

**A review of Unley Road frontage and the Unley Road / Hart Avenue corner of the site to ensure feasible activation of the ground floor and public realm, especially as the outdoor dining area is unlikely to be supported by Council and DPTI Transport's requirement for a 4.5m by 4.5m corner cutoff, under the Metropolitan Road Widening Act**

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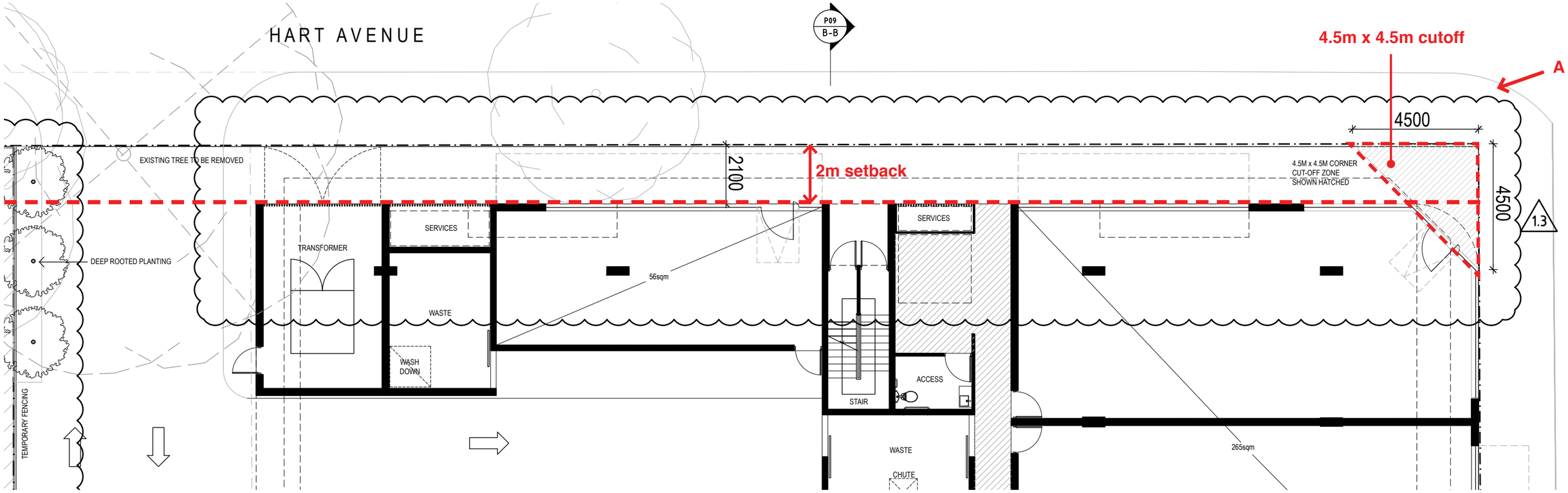
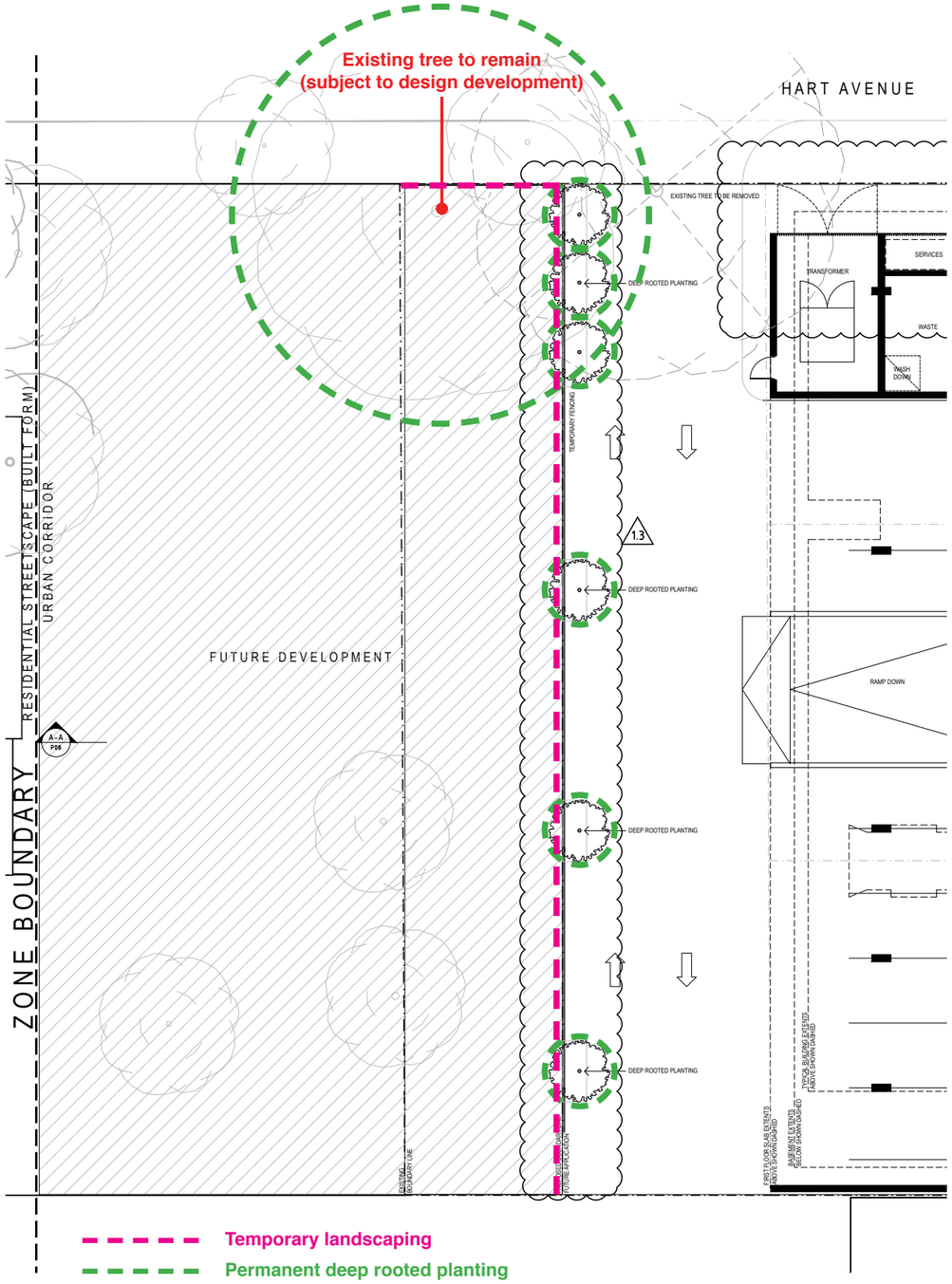
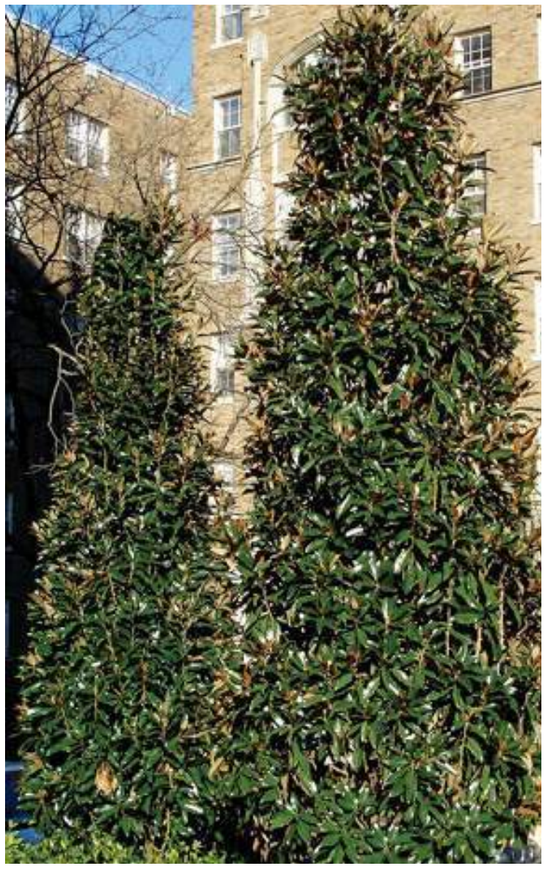



**A**

# PLANTING

**Consideration of the inclusion of areas for deep rooted plantings on the development site**
The inclusion of deep rooted planting and retaining of existing trees within the site has been adopted.
Mature trees also further assist in mitigating the potential for overlooking to the west.



Refer Citygreen Strata-vault brochure

Proposed Species **Magnolia grandiflora Alta**
**subject to design development**

To ensure long term viability and health of the proposed tree plantings, and responding to the narrow width available for garden beds, trees will be installed into Citygreen Strata-vault tree pits which extend beneath the roadway. This approach will ensure that the tree root system has sufficient soil volume for the trees root system to develop into. The Citygreen strata vault system is a trafficable system, which will allow the roadway to be supported above the root zone of the tree, providing the necessary width for the driveway access.

# Previously Provided Content

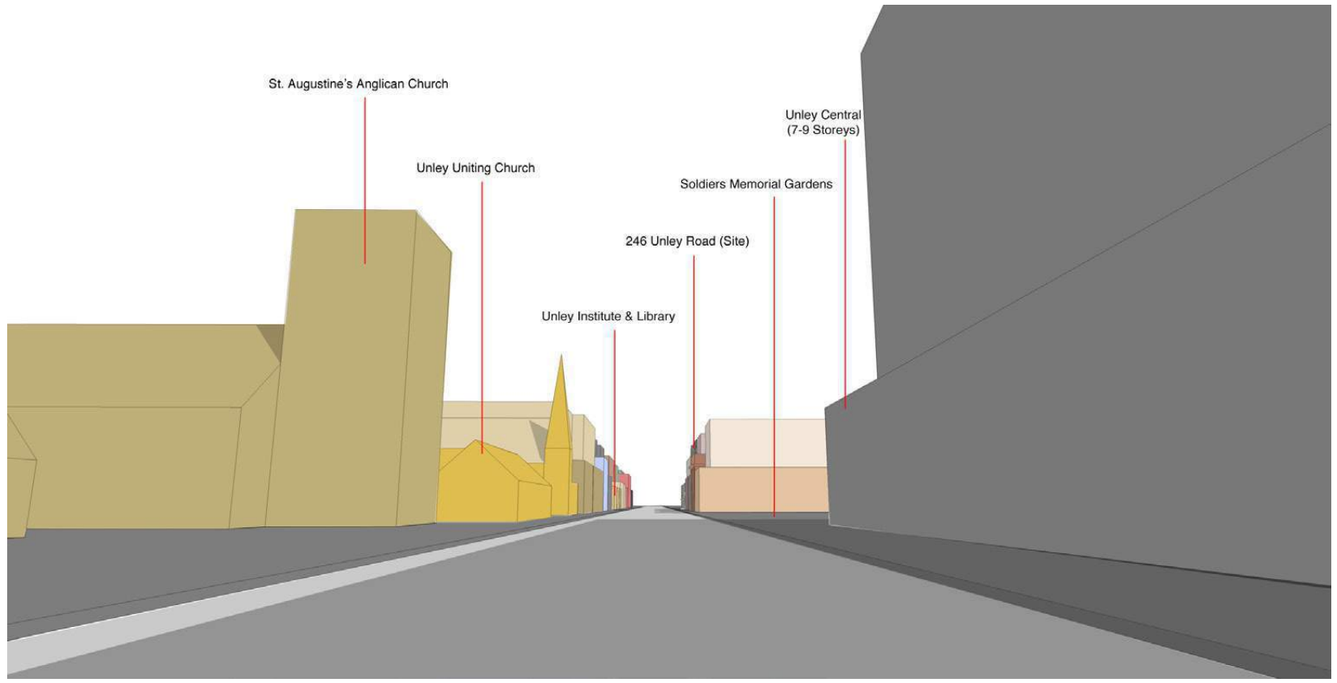
Supporters
Objectors
Local Heritage Place

# Site Analysis

## Future Streetscape

**Unley Road**

Looking North




Looking South

# Site Analysis

# ESD

## Shadows

**Shadow Study**

Summer and Winter Solstice shown.

**Winter Solstice**
**Summer Solstice**

# ESD

## Internal Atrium

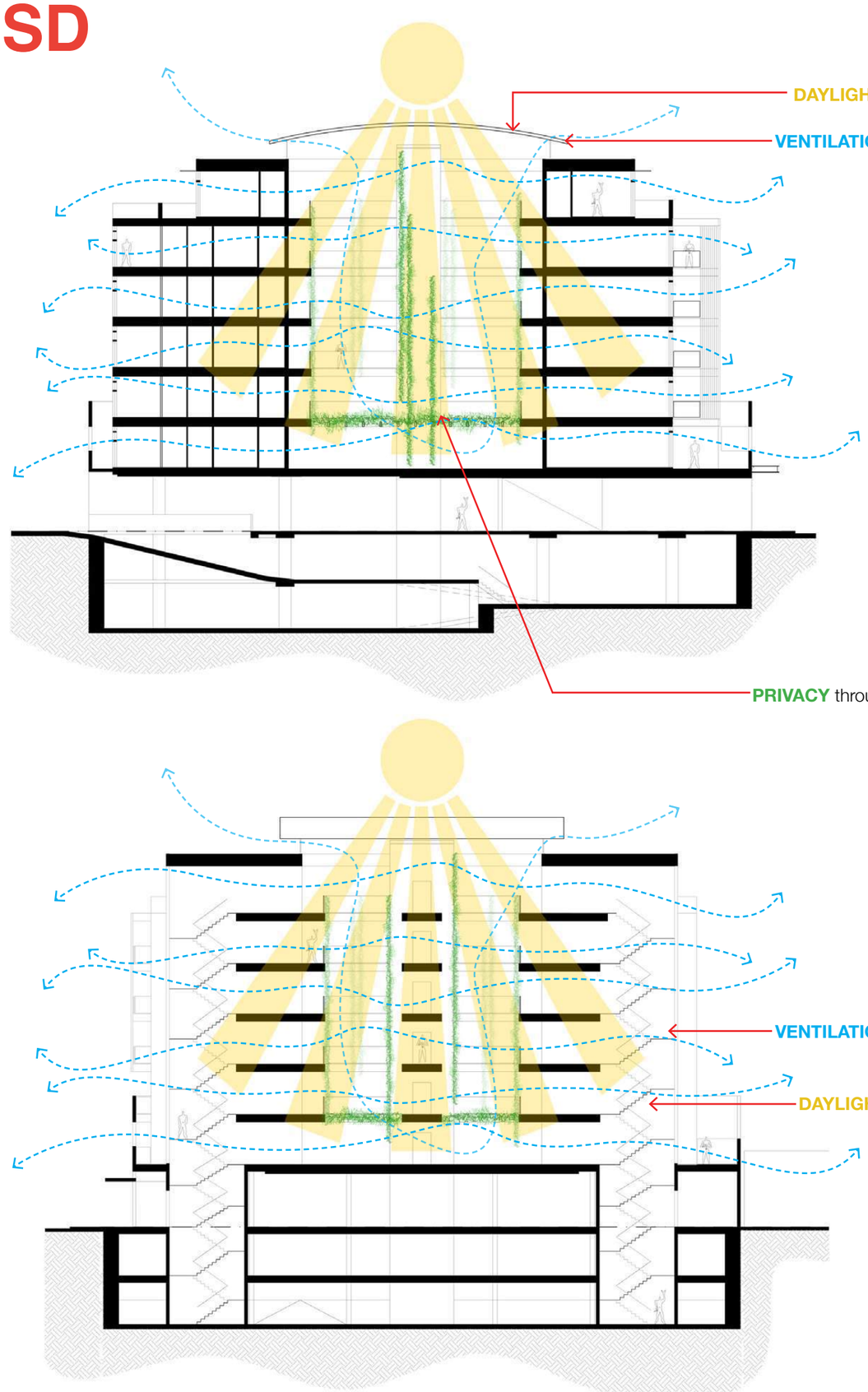
**Refer also:**

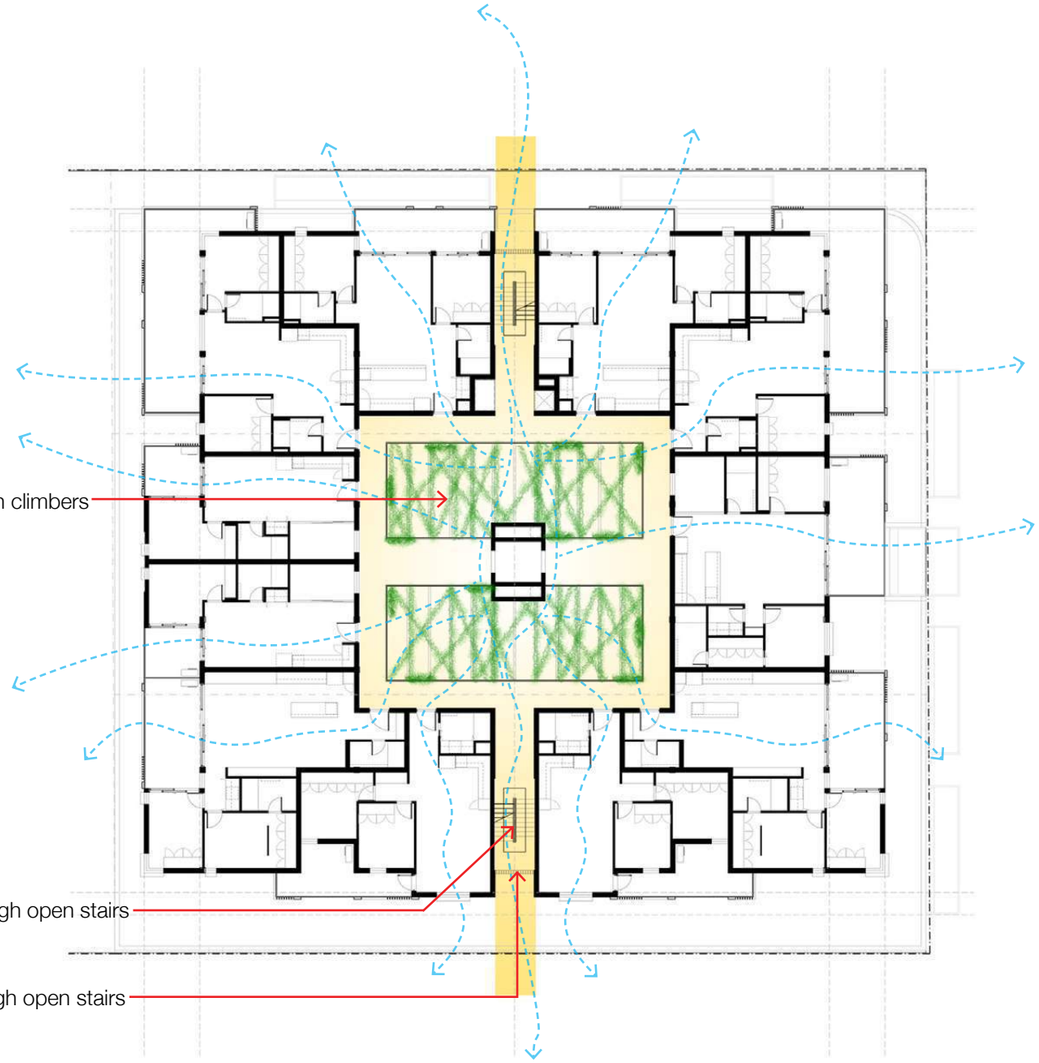
- ESD Report prepared by DSquared
- Concept Report (Landscape) prepared by Hassell

**7 star NatHERS rating over NCC/BCA minimum of 6 Star**

**30% water usage of standard NCC/BCA compliant home**

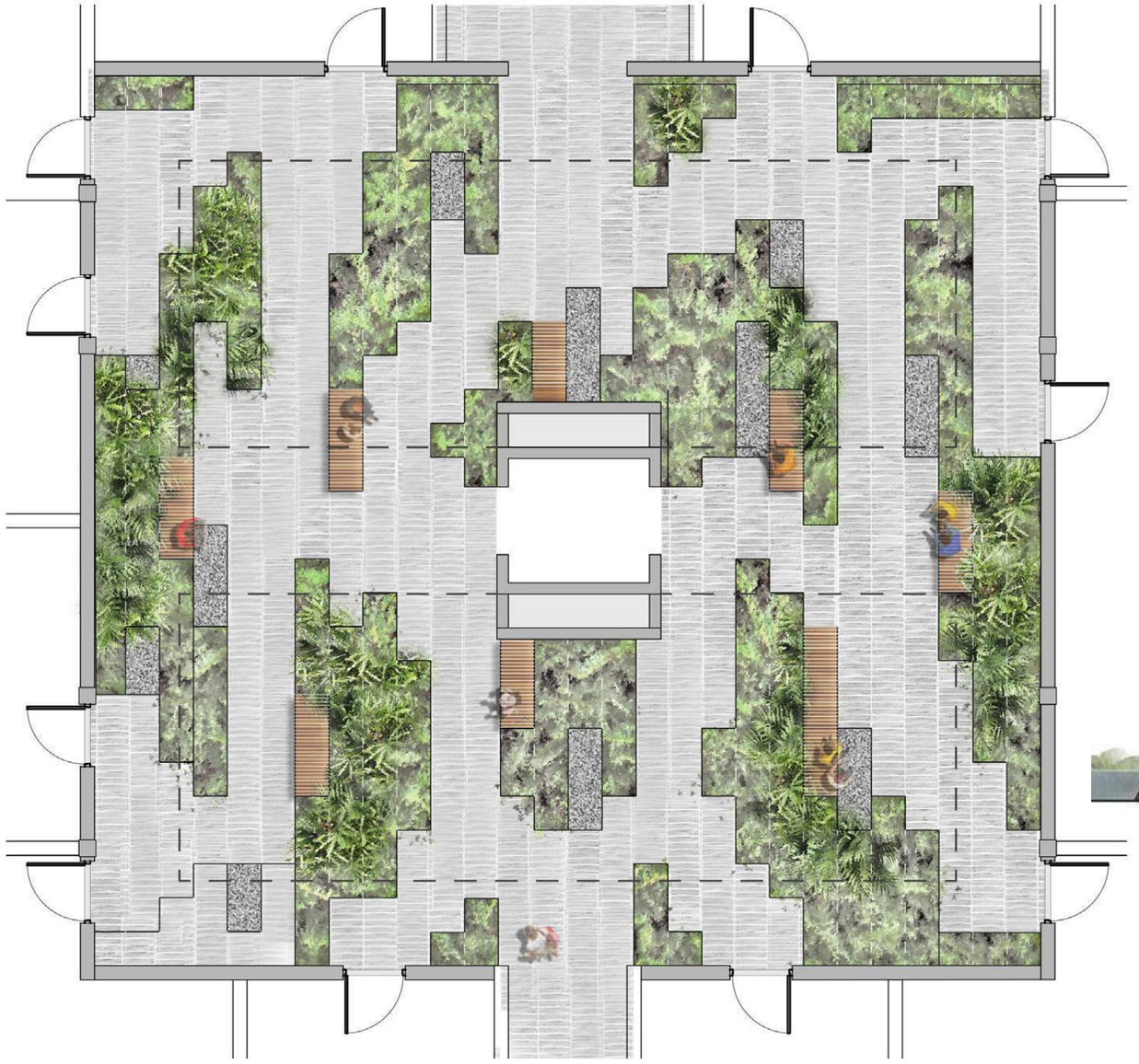
**50% energy usage of standard NCC/BCA compliant home**



## 04 Communal Courtyard
Landscape Concept

**Detail Plan**



**Plant palette**

Philodendron ‘Xanadu’

Trachelospermum asiaticum

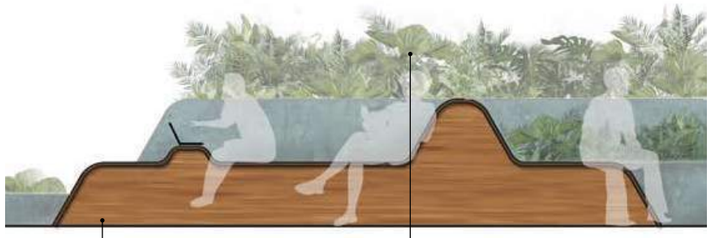
Asplenium nidus

Soleirolia soleirolii

Bamboo sp.

Zamia furfuracea

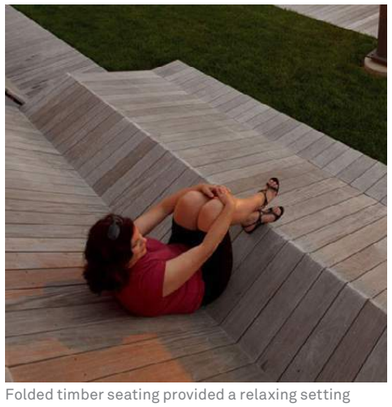
**Typical Seat Detail**



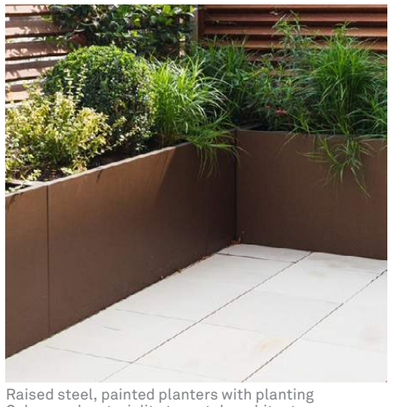
Soft timber ribbons fold up and down to provide seating, sun lounges and small tables for coffee or laptop to sit

Planting of varying levels provide a sense of enclosure and intimacy for the communal spaces

Linear language within courtyard with folded timber seating elements providing tables, seats and lounges

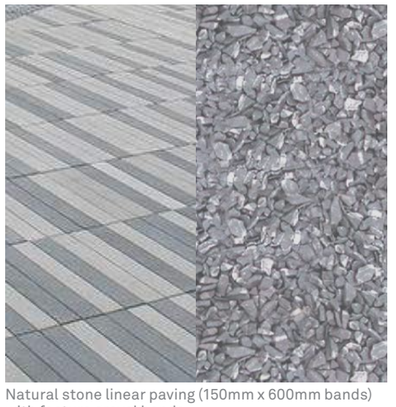


Folded timber seating provided a relaxing setting



Raised steel, painted planters with planting
Colour and materiality to match architecture
Height varies between 225mm, 450mm & 900mm

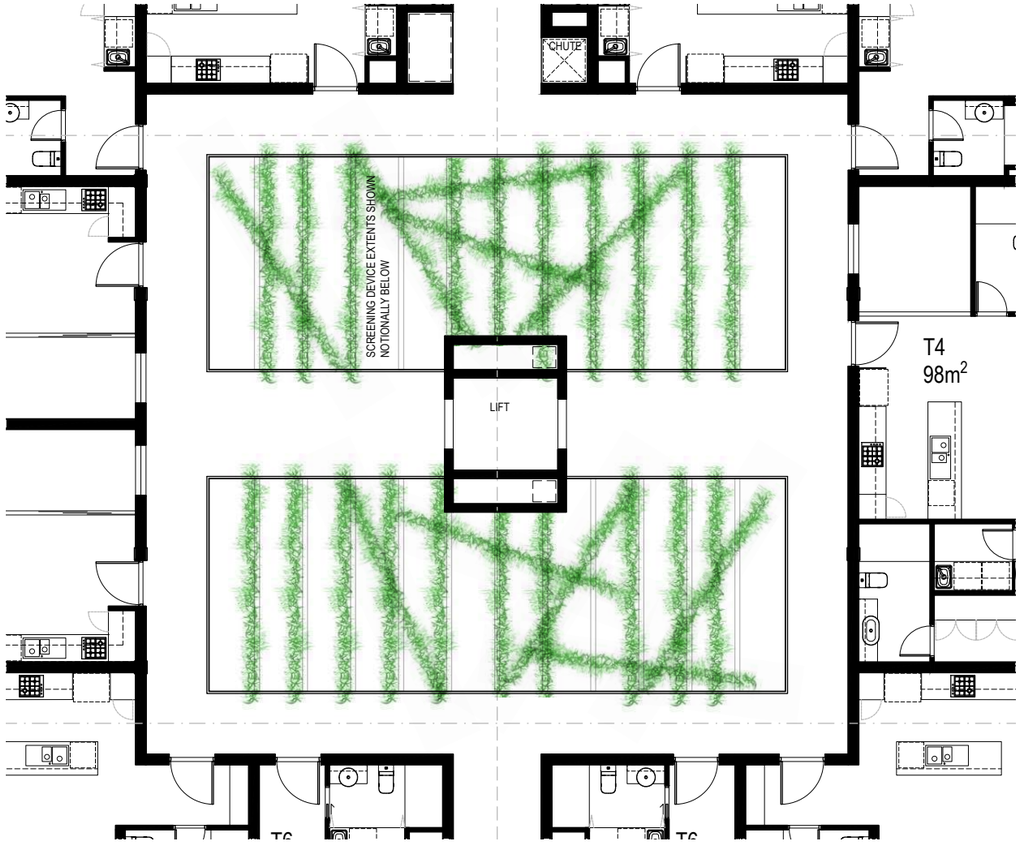
Shade loving, lush greening planting



Natural stone linear paving (150mm x 600mm bands) with feature gravel bands

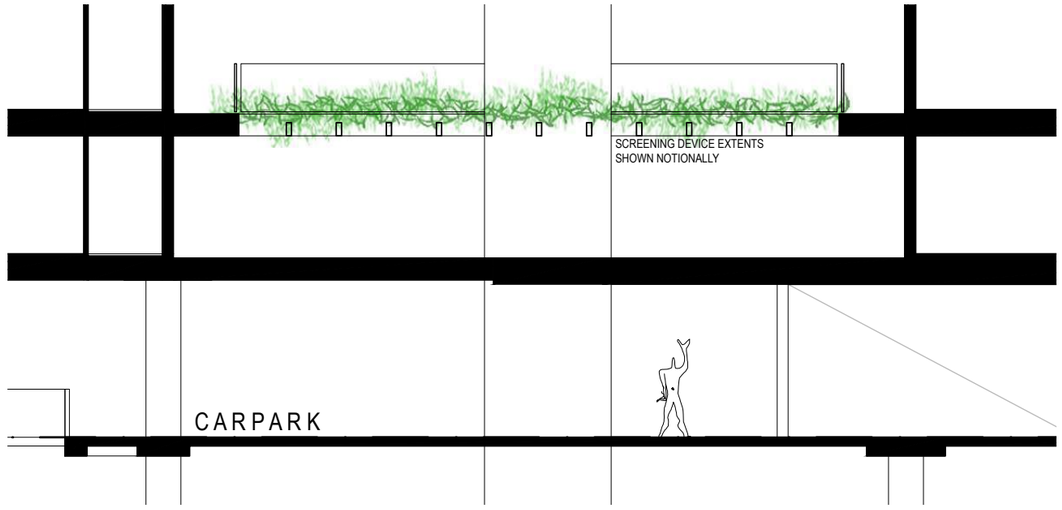
Bamboo species to provide height and provide sense of enclosure to the communal areas

# ESD




Screening Device

## Internal Atrium

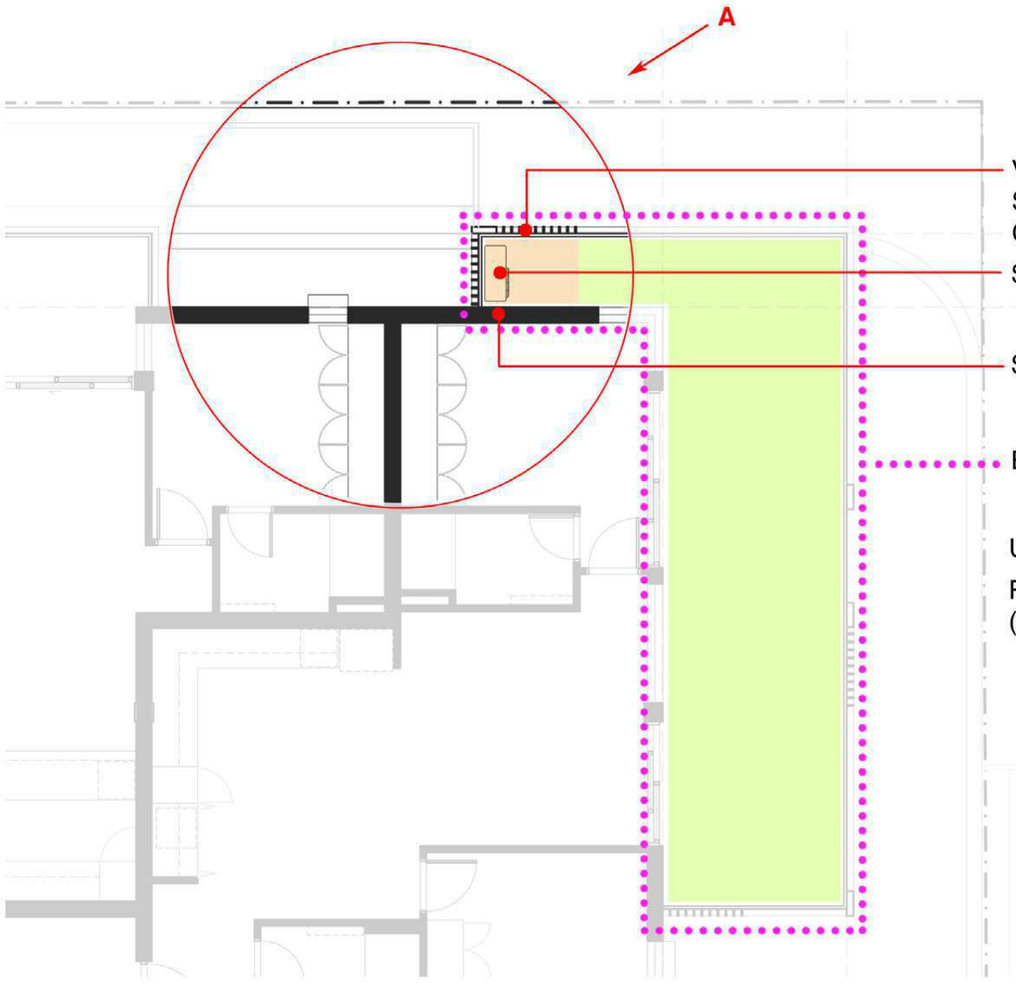


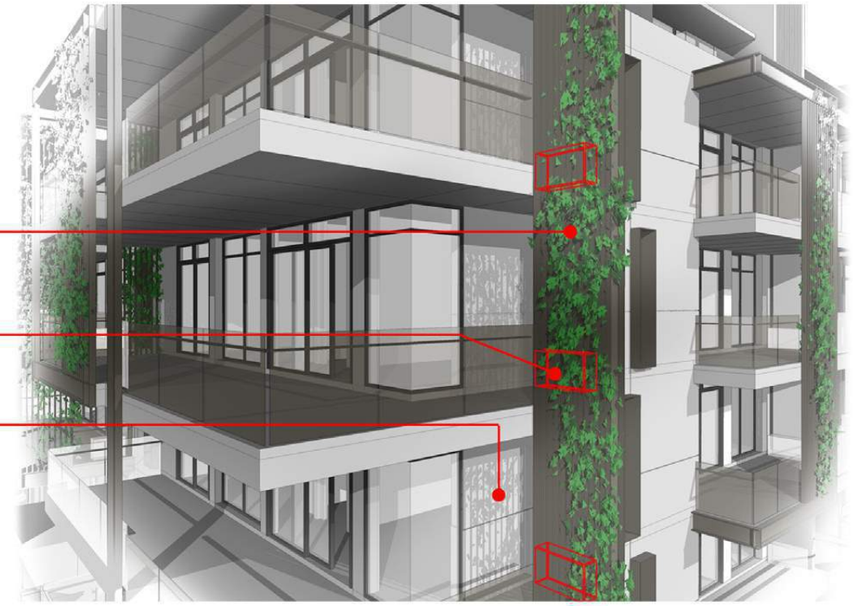

Screening Device

# Plan Detail

## Balcony

### Typical Air Conditioning Condenser Unit Screening Strategy



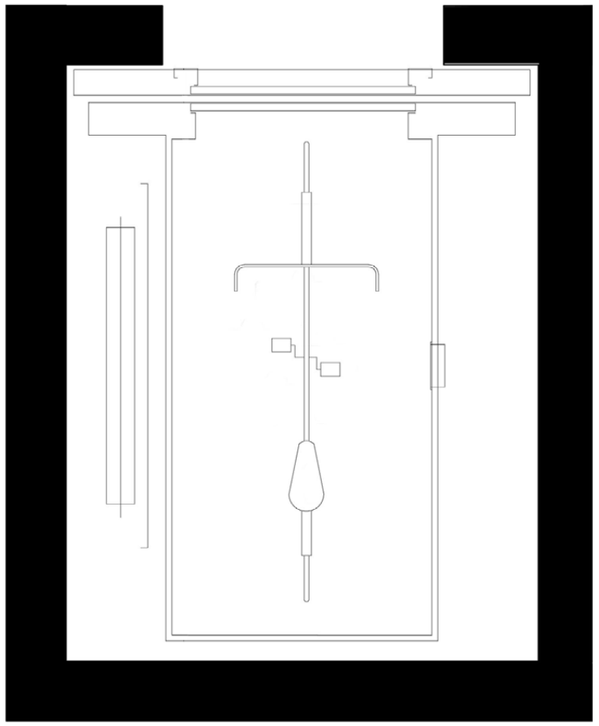



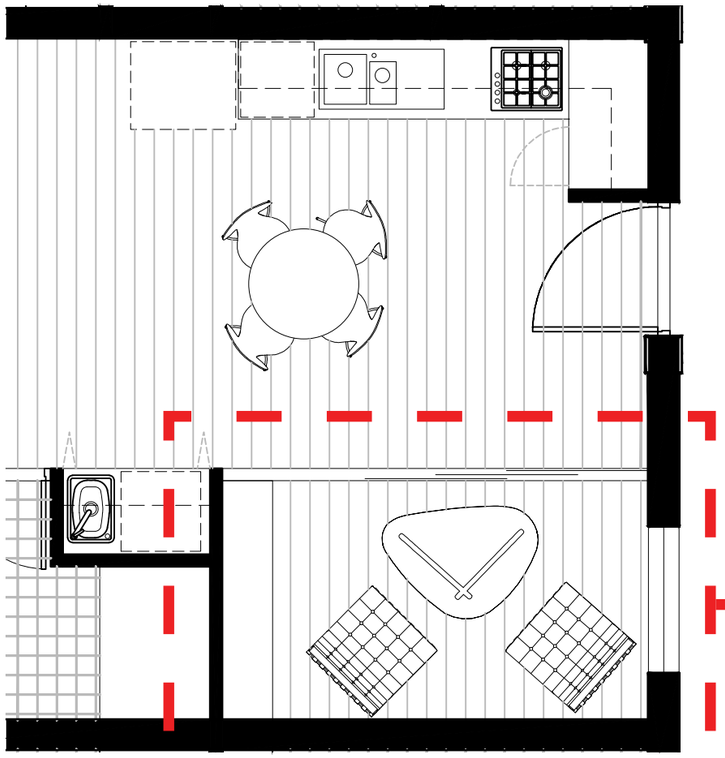
Viewpoint Marked A

# Storage

Cycloc

## Apartment Bicycle Storage





Dayroom I Study

# Architectural Drawings

HART AVENUE

FAIRFORD STREET

UNLEY ROAD

OPEY AVENUE

ADJACENT SITE

ZONE BOUNDARY

RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

FUTURE DEVELOPMENT

P09
B-B

A-A
P08

B-B
P09

A-A
P08

4500

4500

2190

DEEP ROOTED PLANTING

EXISTING TREE TO BE RETAINED

TEMPORARY FENCING

TRANSFORMER

SERVICES

WASTE

TRADE WASTE

STAIR

ACCESS

RAMP DOWN

LIFT

SECURE RESIDENTIAL LOBBY

MAILBOXES

BICYCLE PARKING

GRADIENT ABOVE SHOWN

NOTES:
- ALL EXISTING HAS BEEN SHOWN NOTIONALLY ONLY
- REFER P01 FOR CLOUDED GROUND FLOOR CHANGES

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.1 | 27/07/2018 | DASA COMMENTS |
| 1.0 | 20/09/2017 | PC RFI ISSUE |

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tectvs

CLIENT
CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
CONTEXT PLAN

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P00 - C

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.1 | FB | mdf |

36 FIELD STREET ADELAIDE SOUTH AUSTRALIA 5000
P 08 8 410 5200 F 08 8 410 5244 E mail@tectvs.com.au

HART AVENUE

P09
B–B

UNLEY ROAD

ADJACENT SITE

B–B
P09

ZONE BOUNDARY

RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

FUTURE DEVELOPMENT

A–A
P08

A–A
P08

EXISTING TREE TO BE REMOVED

DEEP ROOTED PLANTING

DEEP ROOTED PLANTING

DEEP ROOTED PLANTING

DEEP ROOTED PLANTING

TEMPORARY FENCING

1.3

1.3

EXISTING BOUNDARY LINE

PROPOSED BOUNDARY LINE FUTURE APPLICATION

4500

2100

4500

4.5M x 4.5M CORNER CUT-OFF ZONE SHOWN HATCHED

TRANSFORMER

SERVICES

WASTE

WASH DOWN

56sqm

SERVICES

STAIR

ACCESS

WASTE

CHUTE

265sqm

SERVICES

LIFT

SECURE RESIDENTIAL LOBBY

MAILBOXES

RAMP DOWN

STORAGE TANKS

BICYCLE PARKING

STAIR

295sqm

CANOPY ABOVE DASHED

FIRST FLOOR SLAB EXTENTS ABOVE SHOWN DASHED

TYPICAL BUILDING EXTENTS ABOVE SHOWN DASHED

BASEMENT EXTENTS BELOW SHOWN DASHED

| REV | DATE | DESCRIPTION |
|---|---|---|
| L3 | 27/02/2018 | DASA COMMENTS |
| L2 | 22/02/2018 | DASA COMMENTS |
| L1 | 29/12/2017 | DASA COMMENTS |
| L0 | 30/08/2017 | DPC ISSUE |

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CLIENT
CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P01

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.3 | FB | mdf |

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RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

ZONE BOUNDARY

A-A
P08

P09
B-B

3000

3M x 3M CORNER CUT-OFF ZONE SHOWN HATCHED

3000

1.2

SERVICES

SMALL CAR

SMALL CAR

SERVICES UNDERGROUND

STAIR

STORAGE

BICYCLE PARKING

LIFT

BICYCLE PARKING

STORAGE

RAMP DOWN
<1:6

STAIR

SMALL CAR

SMALL CAR

A-A
P08

B-B
P09

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.2 | 27/02/2018 | DASA COMMENTS |
| 1.1 | 20/02/2018 | DASA COMMENTS |
| 1.0 | 30/08/2017 | RFC ISSUE |

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CLIENT
CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P02

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.2 | FB | mdf |

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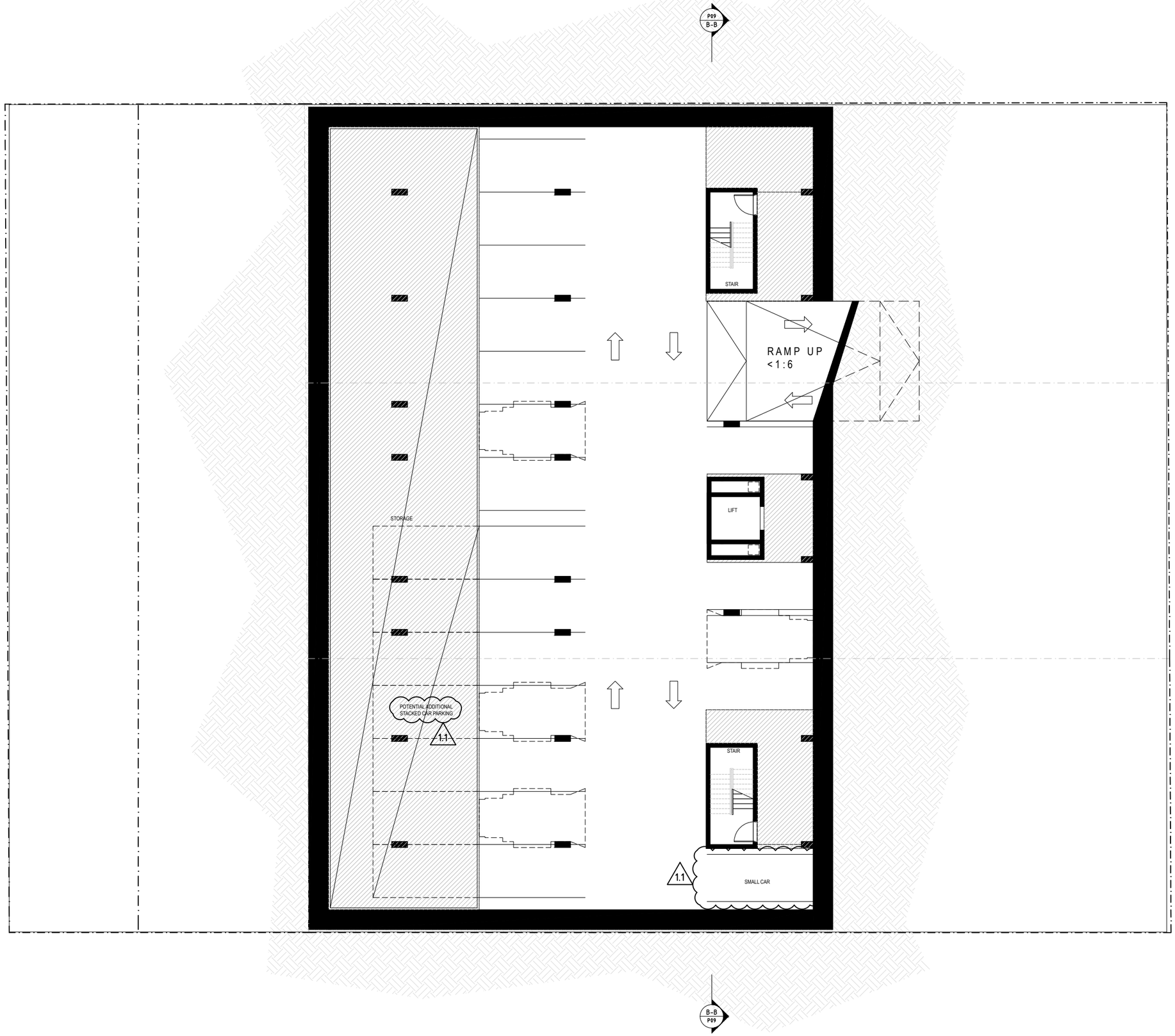
ZONE BOUNDARY

RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

A-A P08




A-A P08

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.1 | 22/02/2018 | COUNCIL COMMENTS |
| 1.0 | 05/09/2017 | DRAFT ISSUE |

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P03

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.1 | FB | mdf |

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RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

ZONE BOUNDARY

A-A
P08

P09
B-B

3000

3M x 3M CORNER CUT-OFF ZONE SHOWN HATCHED

3000

2100

18m²

18m²

58m²

T1
81m²

T2
83m²

STAIR

T2
83m²

CHUTE

T1
81m²

67m²

1.1

VOID EXTENTS ABOVE SHOWN DASHED

SCREENING DEVICE EXTENTS SHOWN NOTIONALLY ABOVE DASHED

15m²

T3
60m²

LIFT

T4
98m²

50m²

REFER TO LANDSCAPING REPORT FOR PLAZA DETAIL

15m²

T3
60m²

64m²

T5
96m²

T6
74m²

STAIR

T6
74m²

T5
96m²

75m²

45m²

3000

45m²

B-B
P09

A-A
P08

11 27/02/2018DAC&A COMMENTS
10 20/09/2017DPC 153LC
REV | DATE | DESCRIPTION

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
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PROJECT NO
27080

DWG NO
P04

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|---|---|---|
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ZONE_BOUNDARY

RESIDENTIAL STREETSCAPE (BUILT FORM)

URBAN CORRIDOR

A-A P08

P09 B-B

2100

14m²

14m²

35m²

T1 81m²

T2 83m²

STAIR

T2 83m²

CHUTE

T1 81m²

35m²

SCREENING DEVICE EXTENTS SHOWN NOTIONALLY BELOW

LIFT

8m²

T3 60m²

T4 98m²

22m²

8m²

T3 60m²

18m²

T5 96m²

T6 74m²

STAIR

T6 74m²

T5 96m²

18m²

14m²

14m²

3000

FIRST FLOOR BALCONY EXTENTS BELOW HATCHED

B-B P09

A-A P08

18 27/02/2018DASA COMMENTS

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|---|---|---|

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CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
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PROJECT NO
27080

DWG NO
P04A

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.0 | FB | mdf |

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ZONE_BOUNDARY

RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

A-A P08

A-A P08

P09 B-B

2100

16m²

16m²

35m²

T1 81m²

T2 83m²

STAIR

T2 83m²

CHUTE

T1 81m²

35m²

SCREENING DEVICE EXTENTS SHOWN NOTIONALLY BELOW

LIFT

8m²

T3 60m²

1.3

T4 98m²

22m²

T3 60m²

8m²

18m²

T5 96m²

T6 74m²

STAIR

T6 74m²

T5 96m²

18m²

14m²

14m²

3000

1.3

PODIUM EXTENTS BELOW

B-B P09

1.3 27/02/2018 DASA COMMENTS
1.2 22/02/2018 DASA COMMENTS
1.1 19/12/2017 DASA COMMENTS
1.0 06/09/2017 SPC ISSUE

| REV | DATE | DESCRIPTION |
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UNLEY

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NORTH

SCALE
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DATE
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PROJECT NO
27080

DWG NO
P05

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.3 | FB | mdf |

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ZONE BOUNDARY

RESIDENTIAL STREETSCAPE (BUILT FORM)

URBAN CORRIDOR

A-A P08

P09 B-B

70m²

T7 152m²

STAIR

CHUTE

T7 152m²

60m²

LIFT

58m²

T7A 155m²

STAIR

T7A 155m²

48m²

17m²

17m²

CANOPY EXTENTS ABOVE DASHED

1.1

B-B P09

A-A P08

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.1 | 27/02/2018 | DA&A COMMENTS |
| 1.0 | 30/08/2017 | SPC ISSUE |

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P06

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.1 | FB | mdf |

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ZONE BOUNDARY RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

A–A
P08

P09
B–B

1.1

PV PANEL EXTENTS
SHOWN NOTIONALLY

FALL

PLANT EXTENTS SHOWN
NOTIONALLY

1.1

B–B
P09

A–A
P08

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1 | 27/02/2018 | DASA COMMENTS |
| 1.1 | 30/08/2017 | PC ISSUE |

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CLIENT
CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P07

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.1 | FB | mdf |

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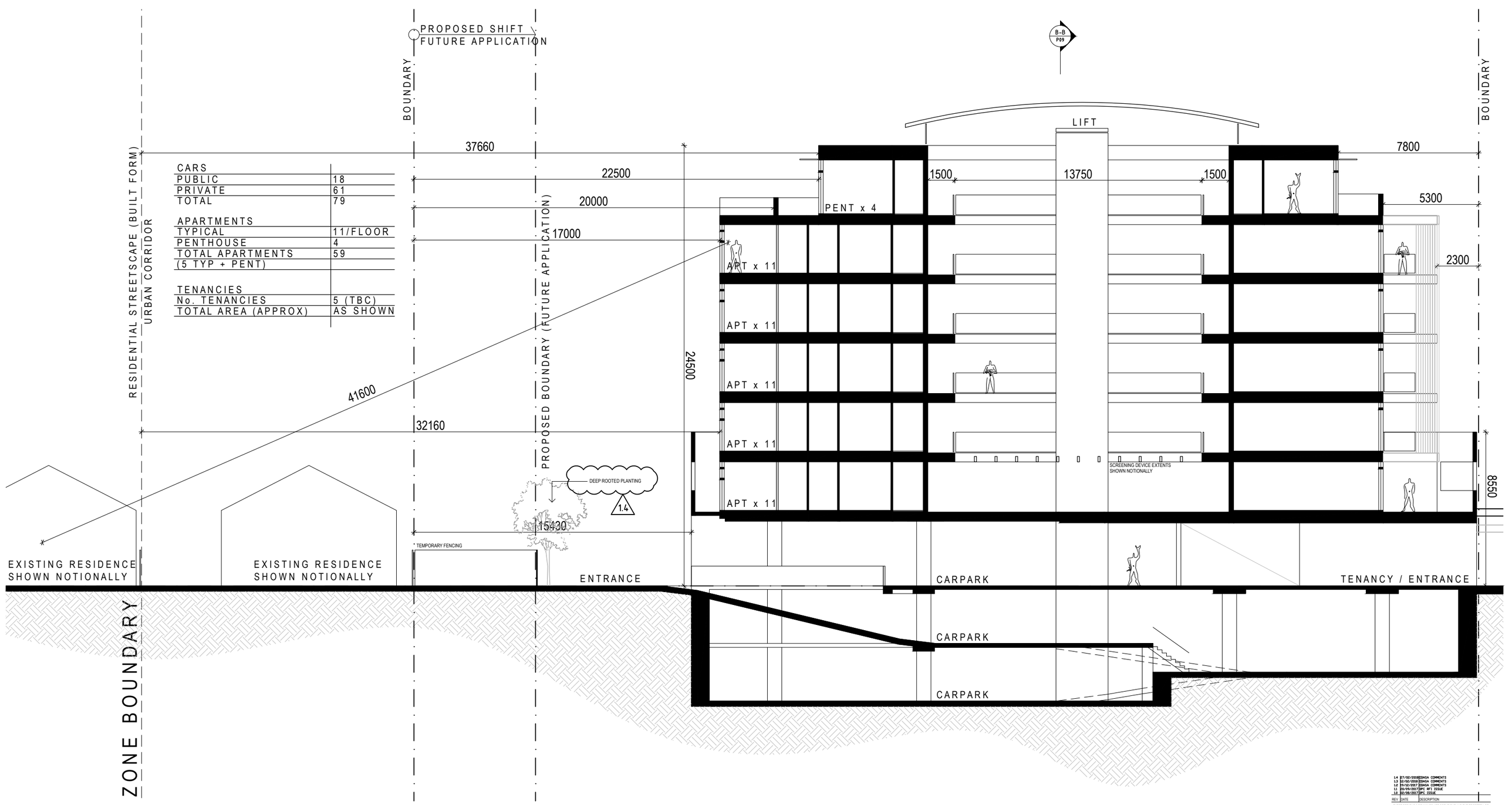


| CARS | |
|---|---|
| PUBLIC | 18 |
| PRIVATE | 61 |
| TOTAL | 79 |
| **APARTMENTS** | |
| TYPICAL | 11/FLOOR |
| PENTHOUSE | 4 |
| TOTAL APARTMENTS (5 TYP + PENT) | 59 |
| **TENANCIES** | |
| No. TENANCIES | 5 (TBC) |
| TOTAL AREA (APPROX) | AS SHOWN |

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.4 | 27/02/2018 | DASA COMMENTS |
| 1.3 | 12/02/2018 | DASA COMMENTS |
| 1.2 | 29/12/2017 | DASA COMMENTS |
| 1.1 | 20/09/2017 | DFC RFI ISSUE |
| 1.0 | 30/08/2017 | DFC ISSUE |

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
SECTION

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P08

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.4 | FB | mdf |

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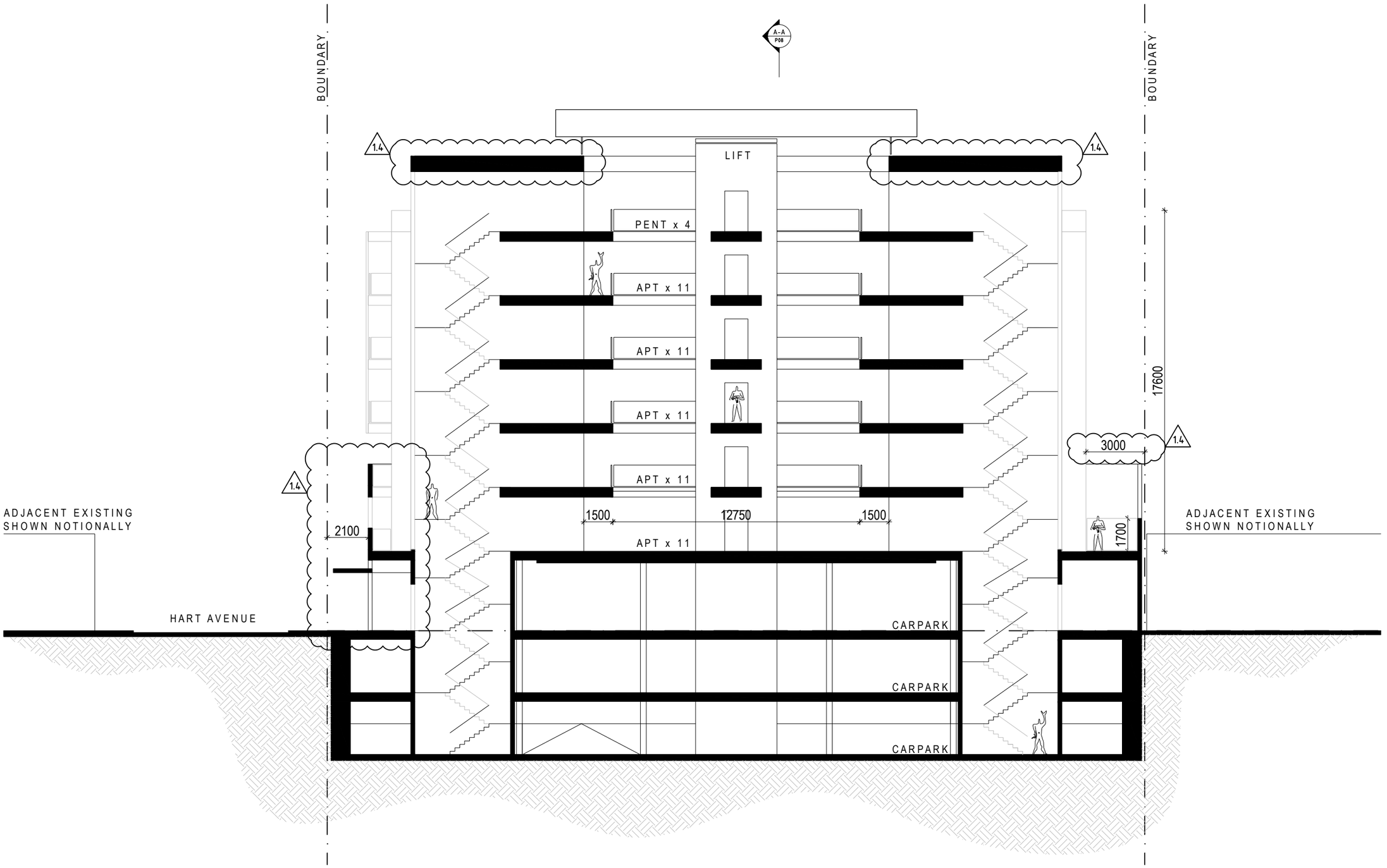


| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.4 | 27/02/2018 | DASA COMMENTS |
| 1.3 | 22/02/2018 | DASA COMMENTS |
| 1.2 | 19/12/2017 | DASA COMMENTS |
| 1.1 | 20/09/2017 | DPC RFI ISSUE |
| 1.0 | 30/08/2017 | DPC ISSUE |

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CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
SECTION

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P09

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.4 | FB | mdf |

36 FIELD STREET ADELAIDE SOUTH AUSTRALIA 5000
P 08 8 410 5200 F 08 8 410 5244 E mail@tectvs.com.au

**MATERIALITY LEGEND**

| | |
|---|---|
| 1 | POLYCARBONATE |
| 2 | COLORBOND BASALT MATTE |
| 3 | VIRIDIAN VFLOAT GREY |
| 4 | COLORBOND NIGHT SKY MATTE |
| 5 | BIANCO PRECAST - P4QIQ (W) |
| 5A | BIANCO PRECAST - P4QIQ (B) |
| 6 | VIRIDIAN VFLOAT BRONZE |
| 7 | DULUX DARK BRONZE 906-8184K |
| 8 | DULUX SPANISH EYES PGIF9 |
| 9 | ALL STONE - SANDSTONE 'SAND DUNE' |
| 9A | ALL STONE - BASALT 'DAWN GREY' |
| 10 | VIRIDIAN VFLOAT CLEAR |
| 11 | DULUX DARK BRONZE 906-8184K |

NOTES:
- GREENWALLS / PLANTING AND LANDSCAPING SHOWN CONCEPTUALLY ONLY
- SUBJECT TO DEVELOPMENT - REFER TO LANDSCAPE REPORT FOR DETAIL
- STREET TREES OMITTED FOR CLARITY

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.4 | 07/02/2018 | DASA COMMENTS |
| 1.3 | 27/02/2018 | DASA COMMENTS |
| 1.2 | 19/12/2017 | DASA COMMENTS |
| 1.1 | 20/09/2017 | DPC RFI ISSUE |
| 1.0 | 30/08/2017 | DPC ISSUE |

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CLIENT
CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
ELEVATIONS

NORTH

SCALE
AS SHOWN

DATE
FEBRUARY 2018

PROJECT NO
27080

DWG NO
P10

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.4 | FB | mdf |

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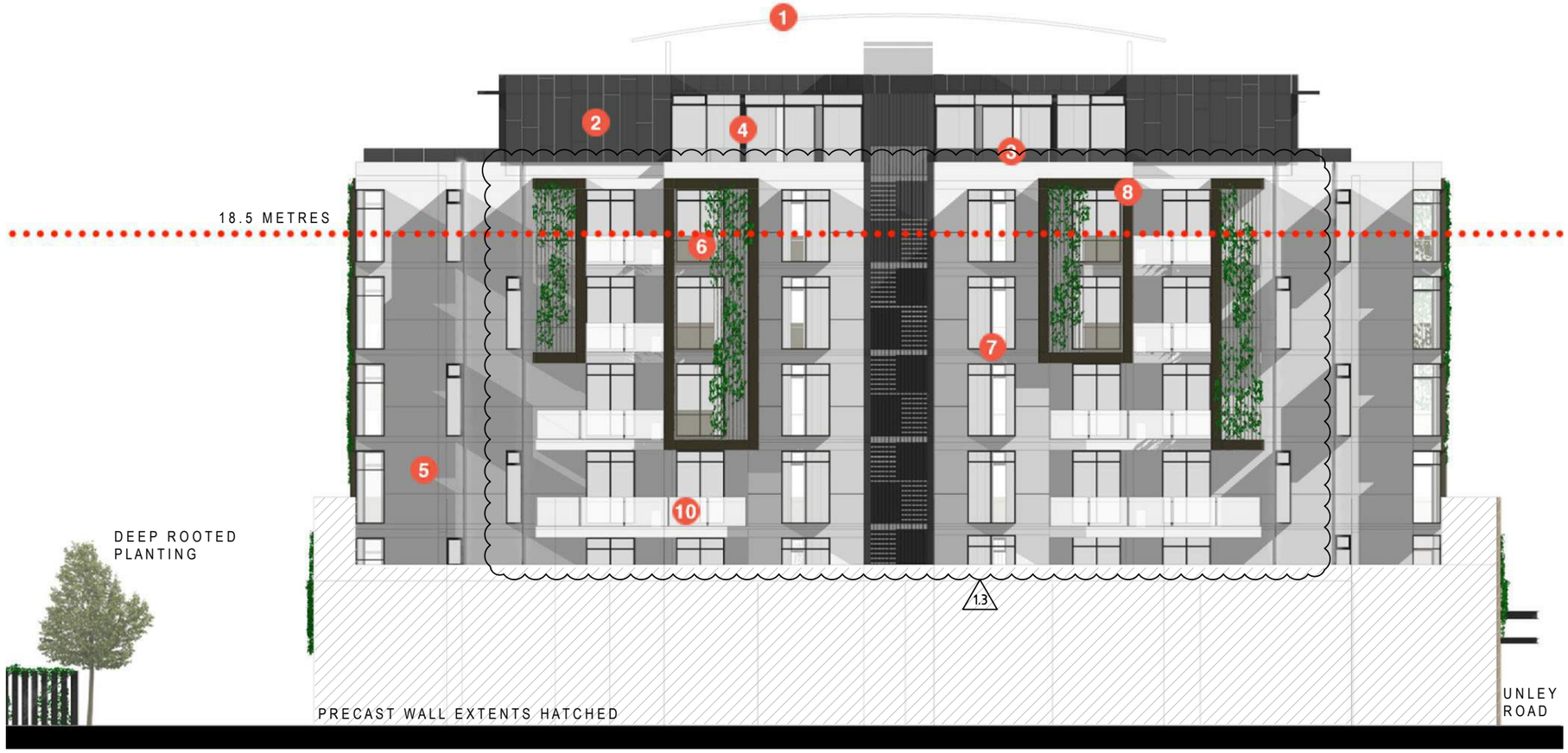


1.4

**MATERIALITY LEGEND**

| | |
|---|---|
| 1 | POLYCARBONATE |
| 2 | COLORBOND BASALT MATTE |
| 3 | VIRIDIAN VFLOAT GREY |
| 4 | COLORBOND NIGHT SKY MATTE |
| 5 | BIANCO PRECAST - P4QIQ (W) |
| 5A | BIANCO PRECAST - P4QIQ (B) |
| 6 | VIRIDIAN VFLOAT BRONZE |
| 7 | DULUX DARK BRONZE 906-8184K |
| 8 | DULUX SPANISH EYES PG1F9 |
| 9 | ALL STONE - SANDSTONE 'SAND DUNE' |
| 9A | ALL STONE - BASALT 'DAWN GREY' |
| 10 | VIRIDIAN VFLOAT CLEAR |
| 11 | DULUX DARK BRONZE 906-8184K |

NOTES:
- GREENWALLS / PLANTING AND LANDSCAPING SHOWN CONCEPTUALLY ONLY
- SUBJECT TO DEVELOPMENT - REFER TO LANDSCAPE REPORT FOR DETAIL
- STREET TREES OMITTED FOR CLARITY

| REV | DATE | DESCRIPTION |
|---|---|---|
| 13 | 27/02/2018 | DASA COMMENTS |
| 12 | 22/02/2018 | DASA COMMENTS |
| 11 | 20/09/2017 | DPC RFI ISSUE |
| 10 | 30/08/2017 | DPC ISSUE |

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UNLEY DEVELOPMENT
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FEBRUARY 2018

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P11

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.3 | FB | mdf |

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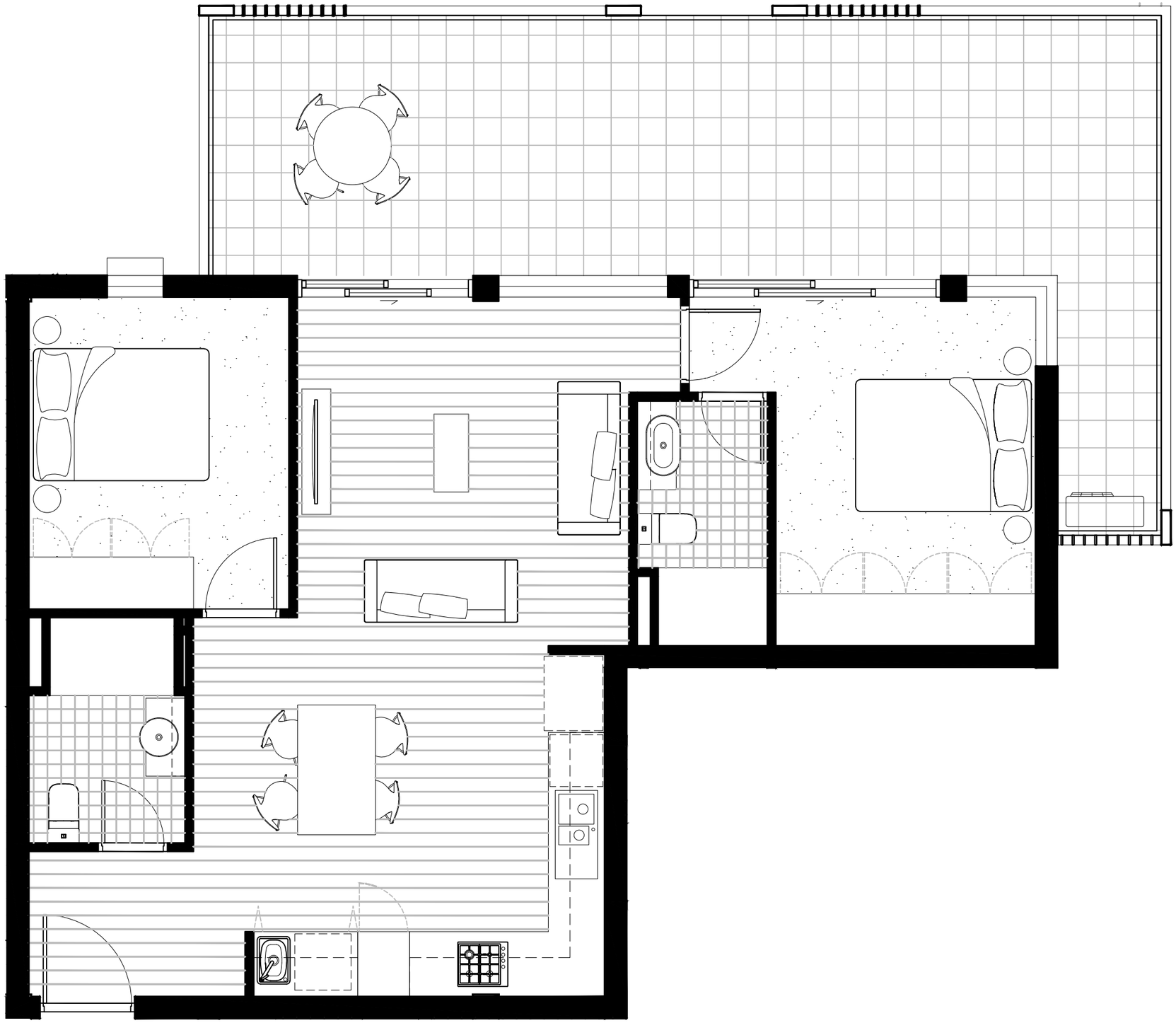
# Apartment Types



# APARTMENT TYPE 01 2 BED 2 BATH 81m²

Excludes balcony

v1.1

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. February 2018.

tectvs

# APARTMENT TYPE 02 2 BED 2 BATH 83m²

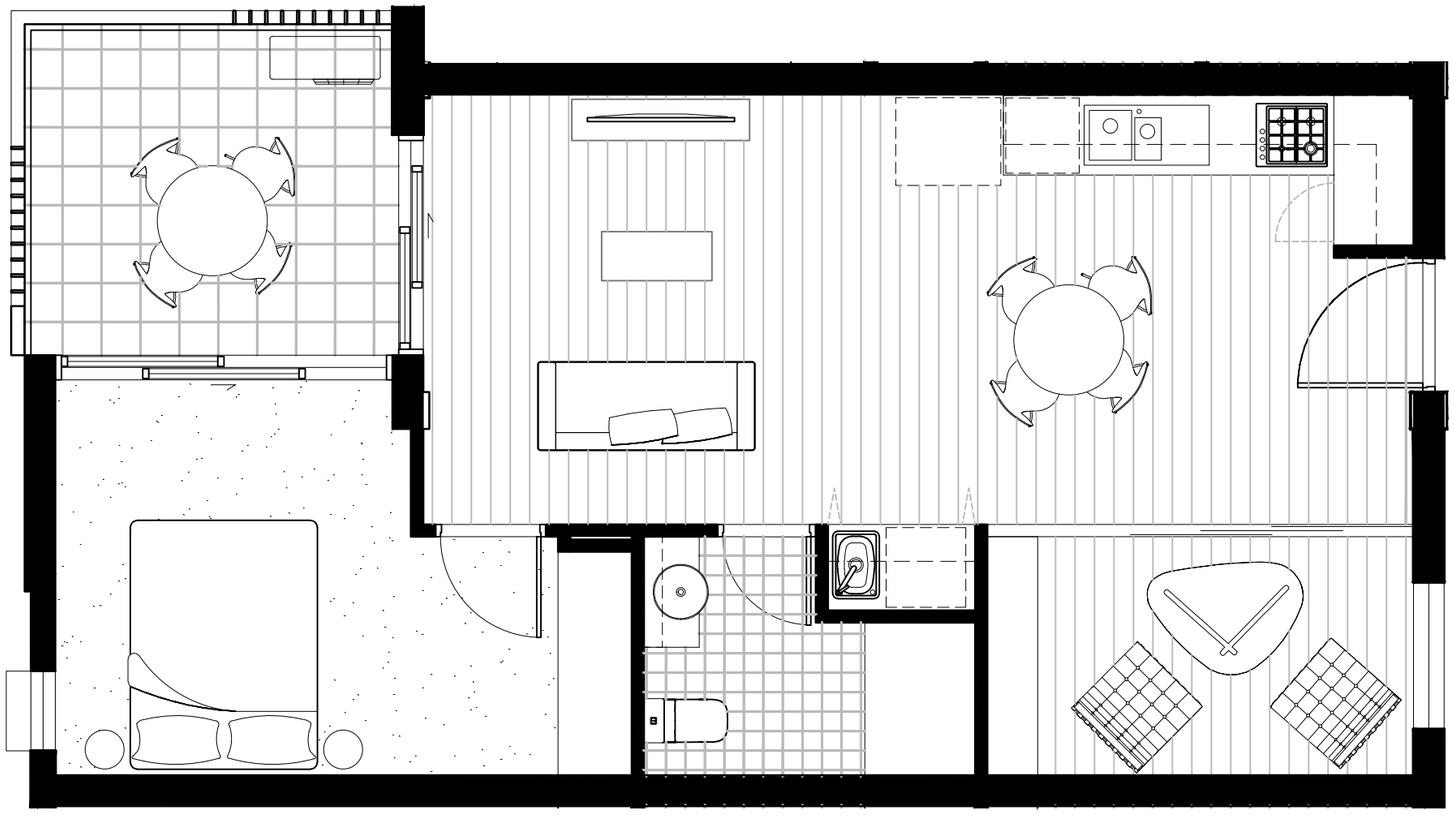
Excludes balcony

v1.1

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. February 2018.

tectvs



# APARTMENT TYPE 03 1 BED 1 BATH 1 STUDY 60m²

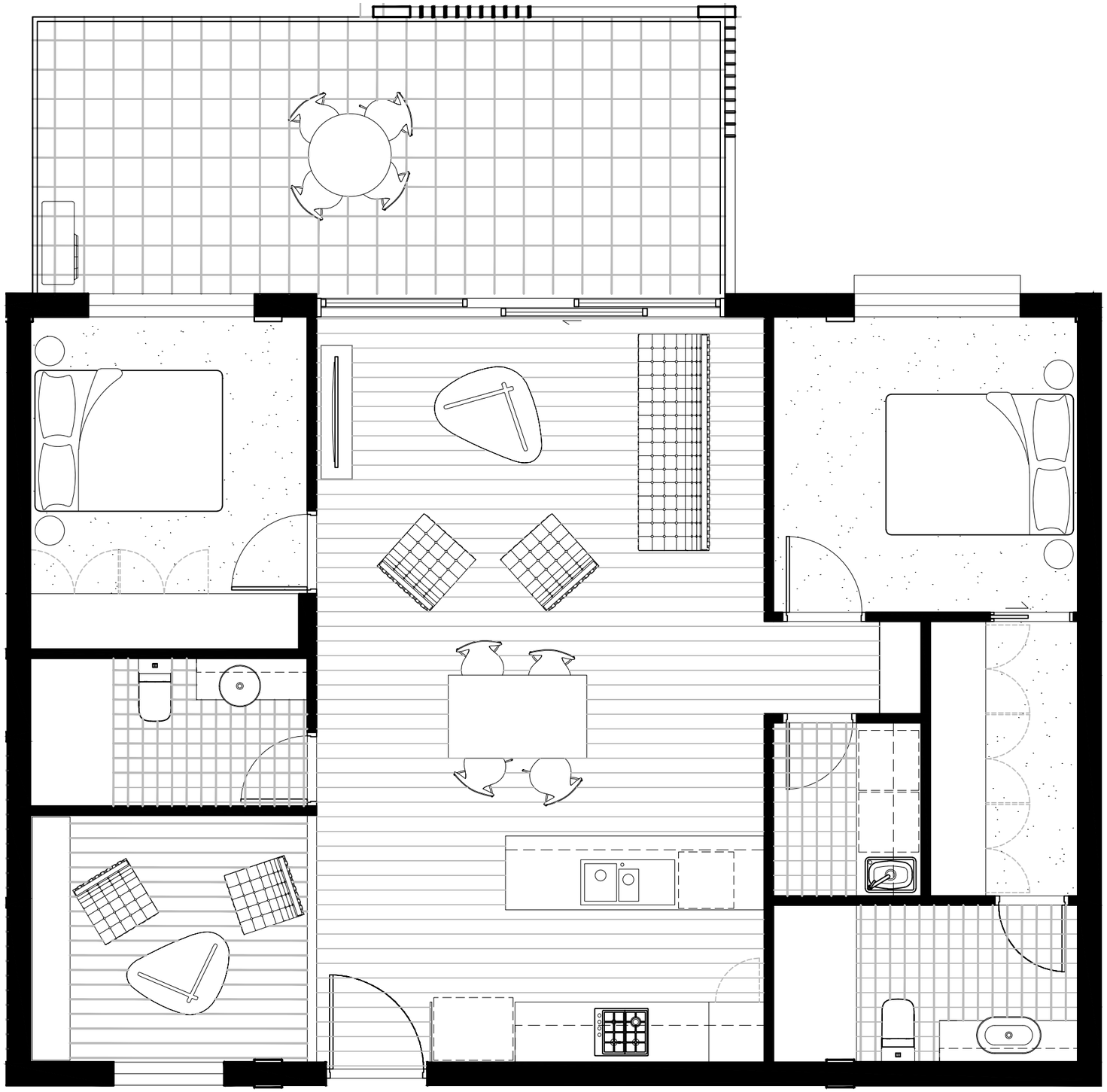
Excludes balcony

v1.2

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. February 2018.

tectvs



# APARTMENT TYPE 04 2 BED 2 BATH 1 STUDY 98m²

Excludes balcony

v1.2

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. February 2018.

tectvs

# APARTMENT TYPE 05 2 BED 2 BATH 96m²

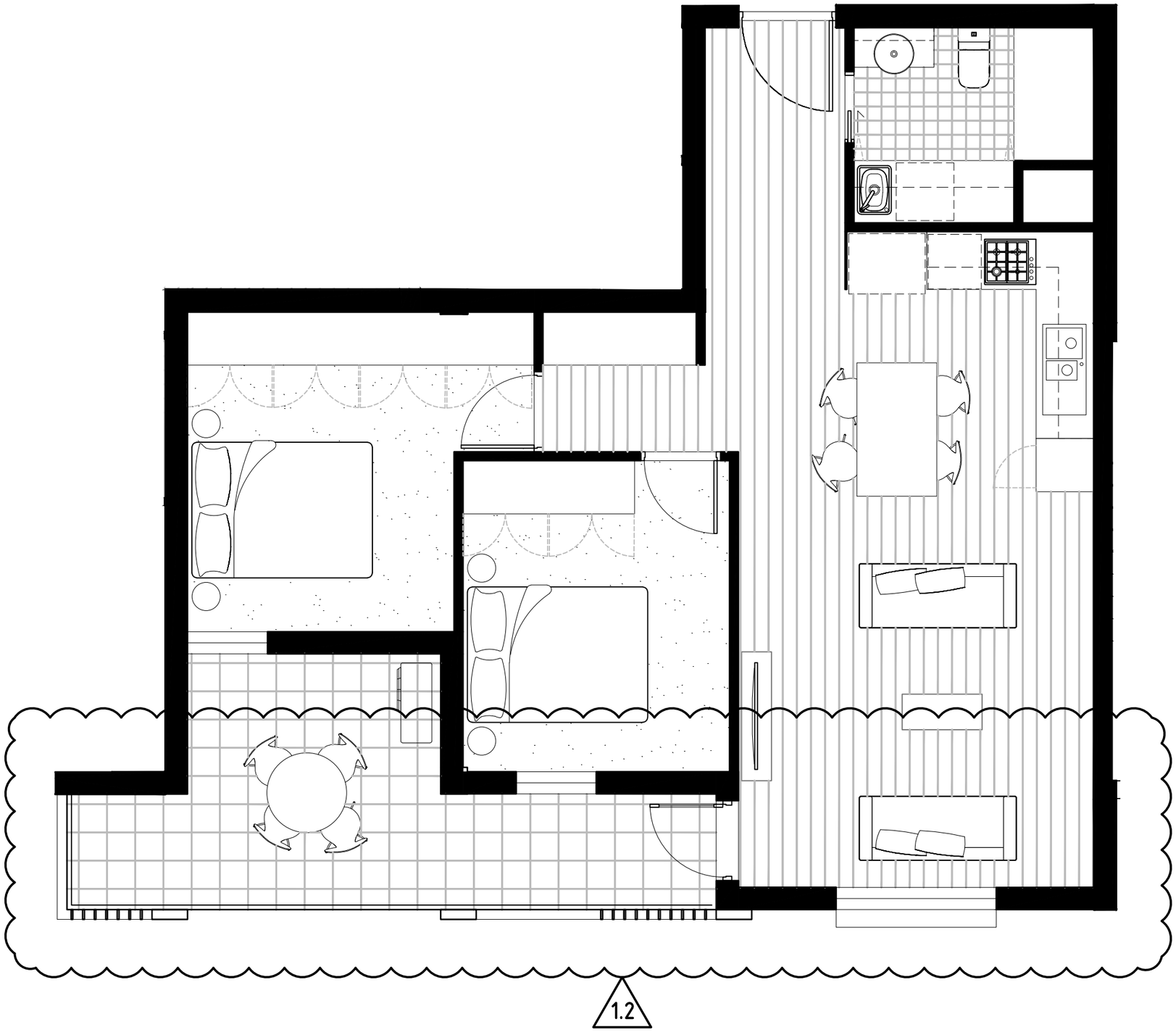
Excludes balcony

v1.1

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. February 2018.

tectvs




# APARTMENT TYPE 06 2 BED 1 BATH 74m²

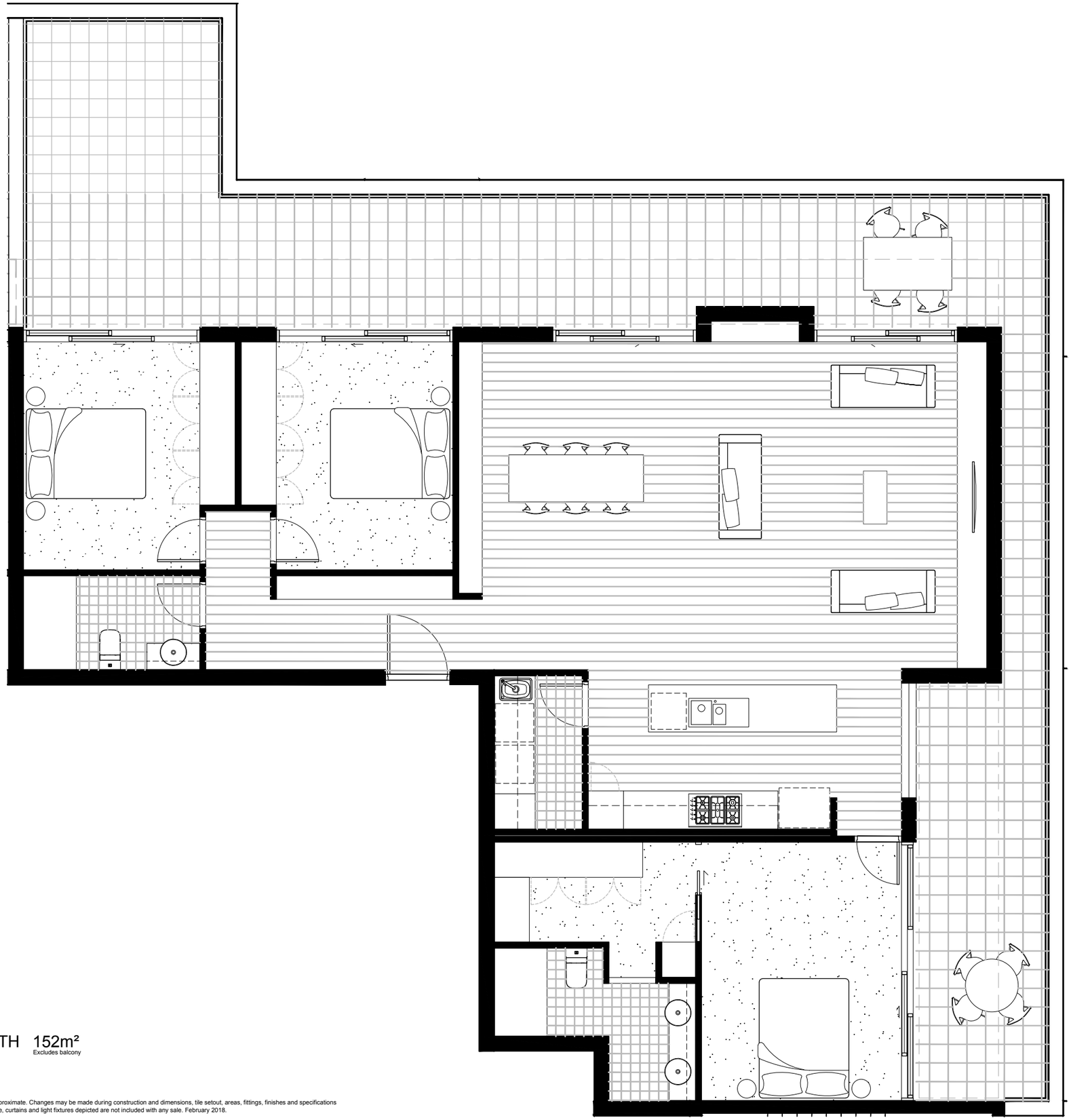
Excludes balcony

v1.2

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. February 2018.

tectvs

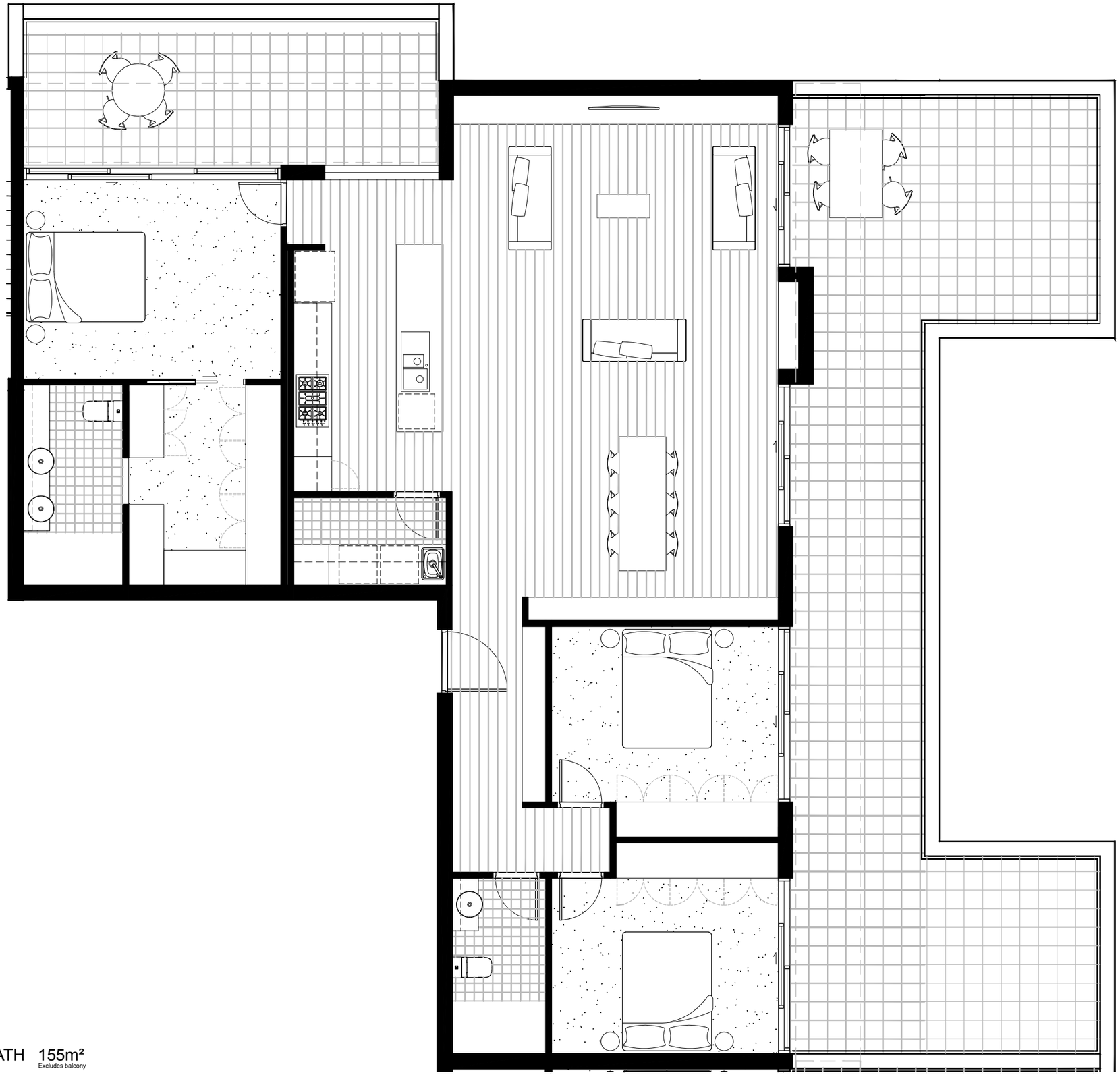


APARTMENT TYPE 07 3 BED 2 BATH 152m²
Excludes balcony
v1.1

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. February 2018.

tectvs



APARTMENT TYPE 07A 3 BED 2 BATH 155m²
Excludes balcony
v1.1

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. February 2018.

tectvs

# Building Matrix

# Building Matrix

## Yield / Area Matrix

**Areas**

Including storage (+ robe) area breakdown.

| AREAS | NFA (m²) | | | | | | | | | | Balconies (m²) | | | | | | | | GFA (m²) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Apt/Floor | TYPE 01 | TYPE 02 | TYPE 03 | TYPE 04 | TYPE 05 | TYPE 06 | TYPE 07 | TYPE 07A | Circulation (m²) | TYPE 01 | TYPE 02 | TYPE 03 | TYPE 04 | TYPE 05 | TYPE 06 | TYPE 07 | TYPE 07A | |
| | | 81 | 83 | 60 | 98 | 96 | 74 | 152 | 155 | | 35 | 16 | 8 | 22 | 18 | 14 | 60-70 | 48-58 | |
| **Ground** | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 108 (lobby / core only) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| **First Level (Terrace)** | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 306 | 2 (58-67) | 2 (18) | 2 (15) | 1 (50) | 2 (64-75) | 2 (45) | 0 | 0 | 1742 |
| **Second Level** | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 172 | 2 | 2 (14) | 2 | 2 | 2 | 2 | 0 | 0 | 1280 |
| **Third Level** | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 172 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 1280 |
| **Fourth Level** | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 172 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 1280 |
| **Fifth Level** | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 172 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 1280 |
| **Sixth Level** | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 172 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1100 |
| **Total** | **59** | 10 | 10 | 10 | 5 | 10 | 10 | 2 | 2 | 1274 | | | | | | | | | |

| PROVISIONS | | | | | | | | | Totals | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Bed 1 | Bed 2 | Bed 3 | Study | Bathroom 1 | Bathroom 2 | Separate Laundry | Storage x + robe | 1 Bed | 10 |
| **TYPE 01** | ✓ | ✓ | - | - | ✓ | ✓ | Euro | 7.2 + 8 | 2 Bed | 45 |
| **TYPE 02** | ✓ | ✓ | - | - | ✓ | ✓ | Euro | 7 + 8.3 | 3 Bed | 4 |
| **TYPE 03** | ✓ | - | - | ✓ | ✓ | - | Euro | 6 + 3 | | 59 |
| **TYPE 04** | ✓ | ✓ | - | ✓ | ✓ | ✓ | ✓ | 7.4 + 9.6 | | |
| **TYPE 05** | ✓ | ✓ | - | - | ✓ | ✓ | Euro | 8.5 + 8 | | |
| **TYPE 06** | ✓ | ✓ | - | - | ✓ | - | Euro | 7.4 + 9.2 | | |
| **TYPE 07** | ✓ | ✓ | ✓ | - | ✓ | ✓ | ✓ | 10 + 18 | | |
| **TYPE 07A** | ✓ | ✓ | ✓ | - | ✓ | ✓ | ✓ | 10 + 22.4 | | |

**Carparking**

| | Carparks |
|---|---|
| Public | 18 |
| Private Apartments | 61 |
| Total Car Parks | 79 |

**Bicycle Parking**

| | |
|---|---|
| Public | 8 |
| Private | 28 (+ apt storage) |

**Tenancies**

| | NLA (m²) |
|---|---|
| | Ground |
| Total | 616 |

**Notes**

**All areas are approximate only**

**Tenancy divisions to be confirmed**

# Development Team

# Team

## Development Team

**Tectvs with Catcorp with Future Urban Group**

Combining decades of inner city mixed-use development experience with commercial development expertise

- Catcorp: Developer
- Tectvs: Architects
- Future Urban Group: Planner
- Hassell: Landscaping
- Rawtec: Waste
- Phil Weaver: Traffic
- DSquared: ESD & Sustainability
- Resonate: Acoustics
- Lucid Consulting: Building Services
- Structural Systems: Civil / Structural

*Think beyond the square.*

# 246 Unley Road

2018.02.27 **Compiled Report**

**Woehle, Karl (DPTI)**

**From:** Phil Weaver <glenphil@internode.on.net>
**Sent:** Monday, 26 February 2018 6:39 PM
**To:** 'Chris Vounasis'; Woehle, Karl (DPTI)
**Subject:** RE: 246 Unley Road, Unley - Updated Car Parking Summary
**Attachments:** 244 Unley Road, Unley MRV turning path pw 26.2.18 Existing Parking Conditions.pdf; 244 Unley Road, Unley MRV turning path pw 26.2.18 Proposed Parking Conditions.pdf; 244 Unley Road, Unley MRV turning path pw 26.2.18.dwg

Dear Chris,

I refer to our discussions earlier today with respect to the above development.

As discussed, we have undertaken further inspections of the section of Hart Avenue directly in front of the subject site, and have identified ./ confirmed the following details:-

- The capacity of the on-site car parking on both sides of the road,
- The details of the existing parking restrictions on each side of this roadway,
- The widths of Hart Avenue and the footpaths of each side of this roadway, and
- The locations of the existing crossovers on each side of the road.

We then incorporated these details onto one of our previous plans and gave prepared two figures showing the following:-

- Figure 1: Existing parking conditions and crossovers, and
- Figure 2: Proposed access point into the subject development and the implications on the on-street car parking.

  This figure includes a turning path of an MRV design vehicle reversing into the proposed access point on the southern side of Hart Avenue then turning right out onto this roadway. We have assumed that this vehicle would pull onto the southern side of Hart Avenue before reversing into the proposed access point in order not to impact on the existing on-street car parking spaces located on the opposite (northern) side of this roadway.

  This vehicle potentially uses two on-street spaces to the immediate west of the proposed access point to undertake this manoeuvre, however signage could be provided to permit these spaces to remain available for afternoon / evening weekday periods and weekend periods with parking prohibited only during the period in which the refuse / recycling bins will be serviced.

I note that the current design would also provide an additional on-street parking space on the southern side of Hart Avenue between the intersection with Unley Road and the location of the proposed access point into the subject site. Currently there are two access points on this side of Hart avenue including the access point associated with Hart Avenue and the access point at the rear of the buildings fronting Unley Road.

Hence, there is a potential to increase the overall car parking capacity of the subject section of Hart Avenue by one space with the exception of the period when refuse / recycling is being collected.

I have attached the AutoCAD file and PDF documents showing the above figures to this email for your consideration.

While I note from your email to Karl Woehle (DPTI) earlier today that there would theoretically be a minor shortfall in on-site car parking for non-residential visitors to the site (0.4 spaces) I consider that there is a much more significant shortfall in on-site car parking associated with the existing development.

From the many inspections of the locality during the course of assessing the proposed development, and that of the previously approved development relating to the subject site, it has always been my experience that the on street car parking areas have not been at capacity during weekday periods.

For example, an inspection of the locality at approximately 3.00 pm today identified only 4 cars parked on the southern side of Hart Avenue between Unley Road and the western boundary of 3 Hart Avenue, whereas the current parking capacity in this area is equivalent to at least eight spaces.

I would be happy to discuss the above matters with you further, if required.

Regards

Phil Weaver

**PHIL WEAVER**

**PHIL WEAVER AND ASSOCIATES PTY LTD**
204 Young Street
Unley SA 5061

| | |
|---|---|
| Telephone | 08 8271 5999 |
| Facsimile | 08 8271 5666 |
| Email | mail@philweaver.com.au |

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---

**From:** Chris Vounasis [mailto:chris@futureurbangroup.com]
**Sent:** Monday, 26 February 2018 3:33 PM
**To:** Woehle, Karl (DPTI) <Karl.Woehle@sa.gov.au>
**Cc:** glenphil@internode.on.net
**Subject:** 246 Unley Road, Unley - Updated Car Parking Summary

Hi Karl

Please find following the updated car parking summary.

| Land Use | Car Parking Provided | Development Plan Requirement | Shortfall/Surplus |
|---|---|---|---|
| Residential Apartments | 60 spaces (basement levels) | 66 spaces | Shortfall of 6 spaces. However, 6 out of the one-bed apartments will not be allocated a car space |
| Residential Visitors | To be shared with non-residential at ground level | 15 spaces | To be shared with non-residential at ground level as demands are complementary |
| Non-Residential (616sqm) | 18 spaces (ground level) | 18.4 spaces | Shortfall of 0.4 car space |
| On-Street Car Parking | One additional on-street car space provided as a result of closing an existing crossover | - | Additional on-street car space compensating for 0.4 shortfall in non-residential. |

In our opinion, the amount of car parking provided is sufficient in consideration of the following:

1. Only 6 one-bedroom apartments will be provided with no car space however the proximity to public transport and provision of bicycle parking (including cycloc systems within the apartment) are appropriate reasons to justify the shortfall.
2. Given the non-residential and residential visitor peak demands are complementary, the ground level car park will be shared. This is an accepted and established approach by traffic experts which is also addressed in Phil Weaver's original report.
3. There are up to 6 on-street car spaces in Hart Avenue (adjoining the site) which could be used by visitors of the commercial or residential apartments which is an existing but improved condition (by virtue of the closure of the existing crossover which would increase the amount of on-street car parking along the southern side of Hart Avenue).

Regards

**Chris Vounasis**
Director

Level 1/89 King William Street
GPO Box 2403
Adelaide SA 5001
PH: (08) 8221 5511
M: 0447 029 088
E: chris@futureurbangroup.com
W: www.futureurbangroup.com

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**From:** Michael De Favari [mailto:michaeld@tectvs.com.au]
**Sent:** Thursday, 8 February 2018 11:41 AM

**To:** Anthony Catinari <anthonyc@catcorpgroup.com.au>; Chris Vounasis <chris@futureurbangroup.com>; Milly Nott <milly@futureurbangroup.com>
**Cc:** Francesco Bonato <fran@tectvs.com.au>
**Subject:** 27080 246 Unley Road - ODASA Presentation Preliminary

All,

Enclosed, preliminary presentation for next week's meeting with DPTI / ODASA, issued for review and comment (Materials board underway and forthcoming).

Notable adjustments as follows:

- Introduction of a 2m setback along Hart Avenue (ground only) including the adoption of a 4.5 x 4.5m cutoff
- Revision of the western facade including a matching of height of the podium with Hart Avenue and Unley Road frontages
- Adjustment of the southern apartment balconies (T6) through an increased setback
- The locating of 'deep rooted plantings' where possible

Refer enclosed.

_____

**Chris / Milly**, we assume you're able to provide commentary on revised car parking numbers and the perceived 'shortfall'?

Regarding 'an updated waste management plan', **Anthony**, is anyone speaking with Matthew Allan (Rawtec) or would you like us to chase this up?

_____

Also attached for information (internal only), an overall site plan which locates the townhouses within the site for reference purposes.

Any queries or comments please don't hesitate to call.

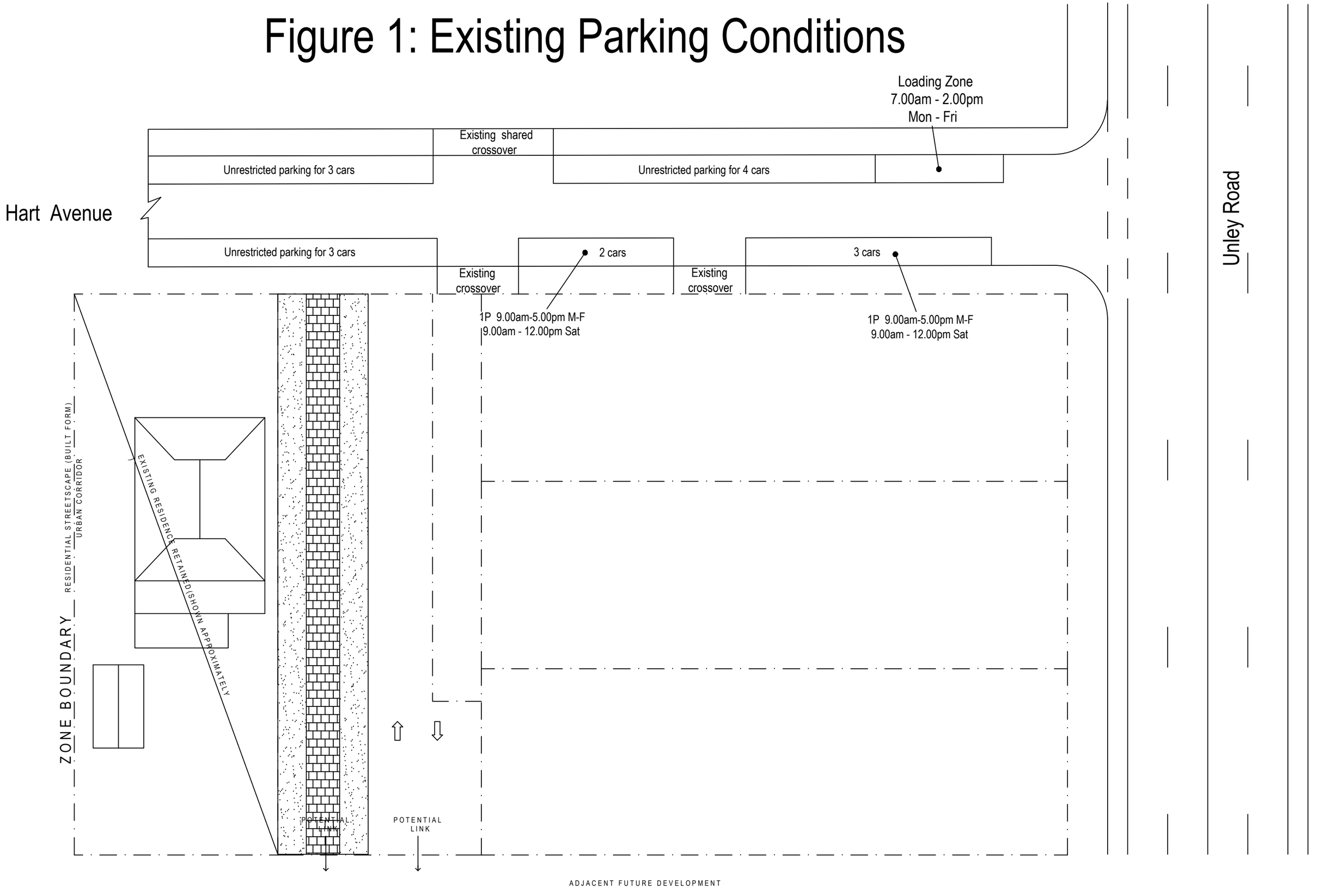
Thank you.

Kind Regards,

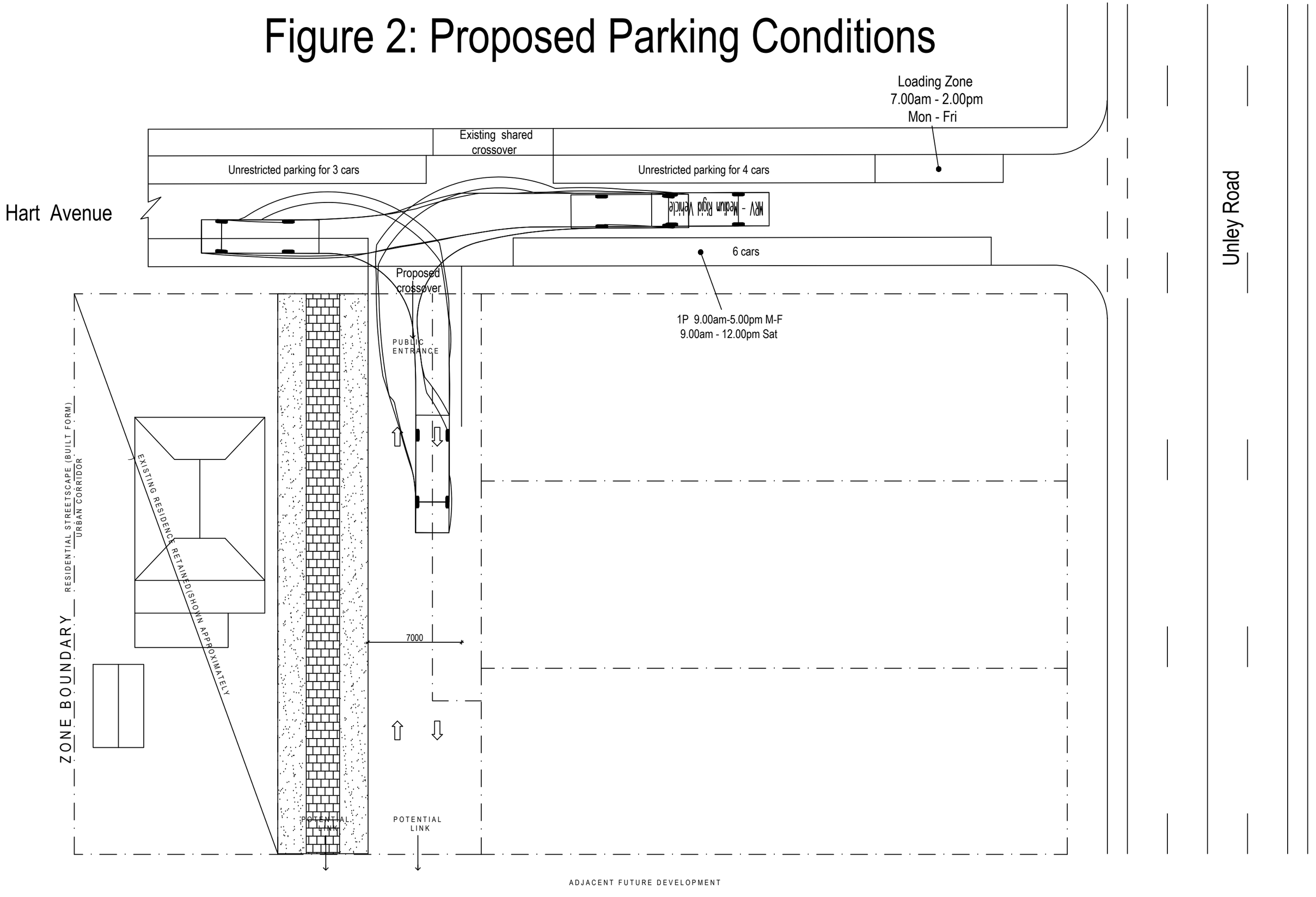
**Michael De Favari** - Graduate of Architecture
for Tectvs Pty Ltd
+ 61 412 489 070
**Adelaide + Melbourne**
167 Flinders St, Adelaide SA 5000
56 Claremont St, South Yarra VIC 3141

Master of Architecture, University of Adelaide
Bachelor of Design Studies, University of Adelaide

# Figure 1: Existing Parking Conditions



# Figure 2: Proposed Parking Conditions



CATCORP

# Unley Road Development
# Waste Management Plan - Revised

**March 2018**

Prepared by Rawtec Pty Ltd

ABN 59 127 176 569
PO Box 1159,
Glenelg South SA 5045
Ph: +61 8 8294 5571
www.rawtec.com.au

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## Document verification

| Date | Version | Title | Prepared by | Approved by |
|---|---|---|---|---|
| 20/6/17 | V1 | Unley Road Development, Waste Management Plan Draft | Matt Allan and Kat Heinrich | Kat Heinrich |
| 6/7/17 | V2 | Unley Road Development, Waste Management Plan | Matt Allan and Kat Heinrich | Kat Heinrich |
| 11/7/17 | V3 | Unley Road Development, Waste Management Plan | Matt Allan and Kat Heinrich | Kat Heinrich |
| 27/2/18 | V4 | Unley Road Development, Waste Management Plan | Matt Allan and Jarvis Webb | Matt Allan |
| 1/3/18 | V4 | Unley Road Development, Waste Management Plan | Matt Allan and Jarvis Webb | Matt Allan |

# Contents

1. Introduction ..... 4
2. Description of the Development ..... 6
3. Overarching Approach ..... 8
4. Estimated volumes and storage areas ..... 10
5. Waste Management System (WMS) ..... 15
6. Collection Requirements and Vehicle Movements ..... 17
7. Supporting Documentation and Design Details ..... 18
Appendix 1: Estimated Waste generation Volumes by Land Use and Waste Stream ..... 19

# 1. Introduction

## 1.1 Purpose

This document provides a waste management plan (WMP), for the proposed development identified in Table 1-1 below. This WMP will be included with building plans for the development lodged with the Development Assessment Commission (DAC) to obtain Development Approval. The WMP outlines the proposed waste management system (WMS) for the development at high-level, which demonstrate that successful management of waste can be achieved at the site.

**Table 1-1: Proposed development's details**

| | |
|---|---|
| **Site Location** | 246 Unley Road, Unley, SA 5061 |
| **Development Project** | Unley Road Development |
| **Client** | CATCORP |
| **Project Architect** | Tectvs |

## 1.2 What this Waste Management Plan Contains

**Table 2: WMP overview**

| | |
|---|---|
| **Section 2 – Description of Development** | Provides details of the development relevant to the WMP preparation and indicates the waste and recycling collection services proposed for the development. |
| **Section 3 – Design Approach & Assumptions** | Sets out the design approach and assumptions that have been used in preparing this WMP. |
| **Section 4 – Estimated Volumes, Storage Area and considerations for the development** | Provides estimates of the waste and recycling volumes likely to be generated at the site which will require storage, collection and disposal. Better practice waste management considerations for the development are also provided. |
| **Section 5 – Waste Management System (WMS)** | Provides an overview of the proposed WMS for the development, including the main elements and important design requirements, and how these systems should operate. The WMS outlines how waste would be stored, transferred and collected at the site. |
| **Section 6 – Collection Requirements** | Includes relevant information on collection requirements, including number of collections per week and provision for access and maneuverability for waste collection vehicles. |
| **Section 7 – Supporting Documentation & Design Details** | This section outlines the required supporting documentation & design details that need to be confirmed in addition to the WMS outlined in this WMP. |
| **Appendix 1 – Estimated Waste Generation Volumes by Land Use & Waste Stream** | This appendix shows the estimated waste and recycling volumes generated by individual land uses and waste streams across the development, used in the preparation of the WMP. |

## 1.3 WMP Status

### 1.1.1. Currently proposed WMS & WMP

This WMP has been developed for the planning stage of this development. It provides a preliminary design for the WMS for this site and is intended to demonstrate that successful management of waste can be achieved at the site. To support this WMP, the Client will need to provide the additional documentation or details on their plans as listed in Section 7.

### 1.1.2. Further development of WMS & Finalisation of WMP

The suggested arrangements in this WMP are preliminary and reflect one possible configuration for the waste management system at this site. These arrangements could evolve and be refined (during detailed building design) before the construction takes place. This may affect the WMP for the site, which should be updated accordingly.

## 1.4 Important Notes

This WMP has been developed in conjunction with the Client, Project Architects, and Traffic Consultant, who have indicated the intended site uses of the development, occupancy data, and requirements for how waste should be managed. If future proposed uses and waste management arrangements for the development are altered, the WMP may need to be reconsidered.

# 2. Description of the Development

## 2.1 Land Uses and Occupancy Data

CATCORP and Tectvs have provided Rawtec with a description of the development and plans showing the proposed layout of the site, buildings and land uses, which can be found in Table 2-1 below. The ground floor plans were updated in February 2018. Note that based on discussions with CATCORP, the land uses in the commercial areas on the ground floor are assumed to be a café, retailer and offices.

**Table 2-1: Land use and occupancy overview**

| Land Use | Location | Land Use Type According to Plans | Land Use Type for waste generation calculation (commercial are assumed) | Occupancy Data |
|---|---|---|---|---|
| Commercial | Ground Floor | Commercial tenancy | Café/ Restaurant | 132.5m$^2$ |
| | | Commercial tenancy | Retail (greater than 100 m$^2$) | 132.5m$^2$ |
| | | Commercial tenancy | Retail (greater than 100 m$^2$) | 147.5m$^2$ |
| | | Commercial tenancy | Offices or consulting rooms | 147.5m$^2$ |
| | | Commercial tenancy | Offices or consulting rooms | 56m$^2$ |
| **Total commercial** | | | | **616m$^2$** |
| Residential | Levels 1 - 5 | 11 Apartments per floor, 55 apartments total | Residential (high density) | 100 bedrooms |
| | Level 6 | 4 Apartments | Residential (high density) | 12 bedrooms |
| **Total Residential** | | | | **112 bedrooms** |

## 2.2 Site Waste Management Requirements

The following waste management and operational arrangements were identified as preferred for the site by the Client and Project Architect (Table 2-2). These arrangements have been considered when developing the design of the proposed waste management system and the information contained in the waste management plan.

**Table 2-2: Site requirement summary**

| Waste Management Requirement | Description |
|---|---|
| **Waste Storage** | The plans allocate room for a single chute throughout the building. The chute will be accessed via a chute doorway in the hallway on each floor. The waste collection room is located on the north-west corner of the ground floor, adjacent the store and near Hart Avenue and the private entrance lane. There will also be a chute room, located at the chute exit point in the ground floor car park. |

| | |
|---|---|
| **Building Services** | Building services would manage waste movement from the chute room to the waste storage room. Building services would also communicate with commercial collection agencies for waste collection. |
| **Collection Service types** | Collection of the waste generated at the Unley Road Development would be undertaken via a commercial collection, as we understand that the City of Unley does not collect waste at multi-unit dwellings of this size. |
| **Source separation of materials** | The WMS provides a number of source separation options for recyclables, including separate cardboard and paper bins in addition to commingled recycling bins We understand that to minimise the number of collections per week, the client may choose to discard cardboard and paper materials into a single comingled recycling stream. |
| **Collection point** | All waste collection would occur from the waste collection room in the north-west corner of the ground floor. There is no on-site loading zone for the waste truck. We understand that the preference is for waste trucks to park on the Private Lane, which is owned by the site, while collecting waste. The waste truck would reverse into the Private Lane from Hart Avenue, park, load the bins, and drive back into Hart Avenue in a forward direction after collecting waste. The Traffic Consultant would need to confirm swept paths, heights and safe vehicle access for these movements. |

# 3. Design Approach and Assumptions

## 3.1 Policy, Design and/or Operational Requirements

This WMP has been prepared with the following policy, design, and/or operational requirements for waste management in mind:

- The South Australian Environment Protection (Waste to Resources) Policy 2010 (W2REPP) (Government of South Australia, 2011):
    - This Policy requires that waste is subject to resource recovery processes, which can include source separation, before disposal to landfill.
- South Australian Better Practice Guide – Waste Management in Residential or Mixed Use Developments (Green Industries SA, 2014):
    - Identifies need for areas to store waste and recyclable materials, appropriate to the size and type of development, screened from public, which minimises disturbance to residents and provides for service vehicle access.
    - Provides guidance on design of waste management systems for medium to high density residential and mixed use developments.

## 3.2 Estimating Waste & Recycling Services, Volumes and Sizing Storage Areas

This WMP includes an estimate of waste & recycling volumes likely to be generated by the development, which can be found in Section 4 below. The estimation of waste and recycling volumes is based on:

- The proposed land use data;
- Client and regulatory expected services for different land uses in the development; and
- Waste generation metrics found in:
    - The South Australian Better Guide Practice Guide – Waste Management in Residential or Mixed Use Developments (Green Industries SA (previously Zero Waste SA), 2014)
    - Waste and recycling metrics developed by Rawtec, which are based on industry knowledge and experience.

## 3.3 Stream/Service Types Requiring Collection of Drop-Off Options

To achieve effective waste and recycling management at the site, Table 3-1 overleaf outlines the recommended waste and recycling services that should be collected from the development. These recommended services align with SA Better Practice Guide mentioned above, which the City of Unley uses as a guide.

**Table 3-1: Proposed stream/ service types based on land use activity within the mixed use development**

| | Required/Desired Waste and Recycling Collection Services | | | | |
|---|---|---|---|---|---|
| | **Land Use** | ***Residential*** | ***Commercial*** | ***Commercial*** | ***Commercial*** |
| | | ***Apartments***<br>*Residential (High Density)* | ***Café***<br>*Café/Restaurant* | ***Retail***<br>*Retail (Greater than 100m2)* | ***Office***<br>*Offices or Consulting Rooms* |
| **Service type** | **Waste and Recycling Stream** | | | | |
| **Routine collection** (e.g. rear-lift collection) | **General Waste** | X | X | X | X |
| | **Co-mingled Recycling** | X | X | X | X |
| | **Organics (Food) Recycling** | X | X | X | X |
| | **Cardboard Recycling** | NS | X | X | NS |
| | **Paper Recycling** | NS | NS | NS | X |
| | **Confidential Paper Recycling** | NS | NS | NS | X |
| ***On-call collection** (pick-up by contractor) *or* External drop-off (by building services) | **Hard Waste** | X | X | X | X |
| | **E-waste** | X | X | X | X |

| | |
|---|---|
| X | = Required/Desired |
| NS | = Not serviced as not required/desired |

Note: 'X' indicates required/desired as per The SA Better Practice Guide – Waste Management in Residential or Mixed Use Developments (Green Industries SA, 2014).

The following waste and recycling streams will not be included within the waste management system:

- E-waste (batteries and printer cartridges etc.) and CFL/Lighting – These waste streams would be either be temporarily stored within the land use area/room where they are generated (i.e. within dwellings) and dropped off at an appropriate external location (e.g. local recycling depot or office supply store) by building services when required, or managed through an external contractor (e.g. for carpark lighting replacement).

# 4. Estimated volumes and storage areas

## 4.1 Estimated volumes

Table 4-1 below identifies preliminary estimates for the total waste and recycling stream volumes generated by the land uses. This table also includes the nominated bin sizes for each waste stream, proposed collection frequency, number of bins required, proposed waste collection service provider, and the location where bins are presented for collection. A table showing estimated waste and recycling volumes generated by individual land uses can be found in Appendix 1.

The below waste volume estimations assume the commercial spaces on the ground floor are for a café, two retail outlets and offices. It also assumes commercial collection for all waste generated at the site.

**Table 4-1: Preliminary estimates of waste and recycling volumes (litres/ week) across all land uses with proposed services and collection frequency**

| Waste stream | Estimated Waste Volume (Litres Per Week)* | Proposed Services | | | | |
|---|---|---|---|---|---|---|
| | | **Bin Size** (Litres) | **Collection Frequency (per week)** | **Estimated no. of bins required** | **Proposed waste collection service provider** | **Proposed location where bins/ waste is presented for collection** |
| **General Waste** | 7,600 | 1100 | 4 | 2 + 1 spare | Commercial Contractor (Regular Collection) | Presentation within the waste collection room, adjacent the store room |
| **Co-mingled recycling** | 3,700 | 1100 | 2 | 2 | | |
| **Organics (Food) recycling** | 4,900 | 660 | 3 | 3 | | |
| **Cardboard Recycling** | 2,300 | 660 | 4 | 1 | | |
| **Paper Recycling** | 200 | 240 | As required | 3 | | |
| **Confidential Paper Recycling** | 20 | 140 | As required | 1 | | |
| **Hard Waste** | 780 | NA (allow 10-15 $m^2$ floor space plus sufficient access to the area) | As required | Not applicable | Commercial Contractor (On call) | At this stage, presentation is in resident apartments. Recommend providing aggregation area on ground floor |
| **E-Waste** | 140 | NA | Residents may dispose of their E-Waste and other hazardous waste via available public drop-off points, or arrange collection by a commercial contractor, which could be conducted with the hard waste collection. | | | |
| **Total** | **19,600 (estimated)** | - | **13 collections per week**** | **13** | | |

**Note: Totals have been rounded to better reflect estimation of the volumes and may not equate*

*** Note: To minimise collections, an option is to place cardboard and paper materials in the co-mingled recycling bins. If this was to occur, co-mingled recycling bins would take approx. 6,300 litres per week, requiring 2 x 1100L bins, and 3 collections per week (rather than the current 6 collections per week). This would reduce the total collections per week from 13 to 10.*

## 4.2 Waste Storage Area and Considerations for the Development

An indicative drawing of the development's waste collection room on the ground floor containing the required number of bins, which includes one example of bin configuration, can be found in Figure 4-1. The paper and confidential paper bins can be stored and collected from the offices, or taken to the waste room for collection by the waste contractor. The remaining general waste, comingled recycling and organics bin can be stored in the chute room (see Figure 4-2).

### 4.2.1. Better Practice Considerations for Waste Management

Based on the plans presented at this stage, some key considerations and options for the site from a waste management perspective include:

- The plans provide no allocated space for hard waste storage.
    - It is recommended that 10 – 15 $m^2$ of space be allocated for storage of hard waste prior to collection (based on once a month collection). Building Services can then organise temporary storage of hard waste until it is collected. The Store room may provide this space, but this has not been confirmed.
    - Alternatively, collection may occur directly from apartments. Note that for this to occur, the building services manager, resident and collection contractor would all need to be present, which can be logistically difficult and an inconvenience for the resident. If a 10 – 15 $m^2$ area was provided in the Store room it would be possible to aggregate hard waste on the ground floor, allowing collection for multiple apartments at the same time which can reduce costs while increasing convenience for residents.
- The plans include a single chute for residents to dispose of their waste. This chute exits on the ground floor in the chute room (see Figure 4-2). We understand that this will be a single chute with a diverter, so residents can choose between general waste or recycling. The SA Better Practice Guide indicates that organics (food and/or garden) is a required or expected service for residents and cafés/ restaurants in South Australia. At this stage, food organics bins are available to the café, but not residents. Some options include:
    - Better practice suggests making food organics disposal an option for residents on each floor. This reduces transport distances for residents and the potential for food waste to leak out in lifts while moving the food organics throughout the building. This could be done by adding another chute for food organics, or by providing small (e.g. 80L) food organics disposal bins within a waste room on each floor. This waste would then be transported to the ground floor for collection by building services via lifts/walkways.
    - An alternative option is to provide residents with access to a food organics bin on the ground floor (e.g. within the chute room). Residents could either access this bin by entering the room where it is located, or via a drop-off window in the hallway (with a bin positioned within a room on the other side of the wall).

- Another consideration is the chute location. In the plans, this is located in the hallway of floors 1 - 6, rather than in an allocated chute room. This may present odour issues and building services may need to clean the chute door on both sides on occasion.
    - An option is to ensure tiling is used below the chute entrance point, to make clean up easier should residents drop/spill their waste before disposing into the chute. Other developments have small chute rooms (a small area behind a door), which can be an effective way to separate waste disposal from the hallway and other residents. Should this option be elected, it is important that consideration is given for access to this room by mobility impaired persons.
- Safe access for Building Services between the chute room and the waste collection room, as well as safe access from the waste truck to the waste room is recommended, as bins are transported across a car park. A pedestrian crossing or allocated pathway for pedestrians and traffic controls between the two rooms would make this pathway safer. Note that it is important to ensure clear access to the waste collection room when transporting the bins. As indicated in section 5.2, these transfer pathways should be free of obstructions and steps, at least 1.25m wide and a slope of no more than 1:10. Obstructions include car parks, as cars may be parked and subsequently block access. A potential access pathway has been provided in Figure 4-3. This access pathway would need to be confirmed by the architect/developer in consultation with the Traffic Consultant and other specialists from relevant disciplines, and then indicated on the plans along with the additional door on the waste room.
- We understand that there are no height restrictions above the waste collection point on the private lane. If there were to be objects above the lane, we recommend a clearance of 4 metres for maximum flexibility in regards to potential waste collection vehicles that can access the site. It is also understood that there is no loading space allocated for the waste collection vehicle. It is recommended that a loading area be allocated for waste trucks to park while collection occurs.
- To allow diversion of the chute in the chute room, it is recommended that the height from ground to ceiling is at least 3 metres.

**Figure 4-1: Preliminary drawing of the waste storage and collection room with an example bin configuration**

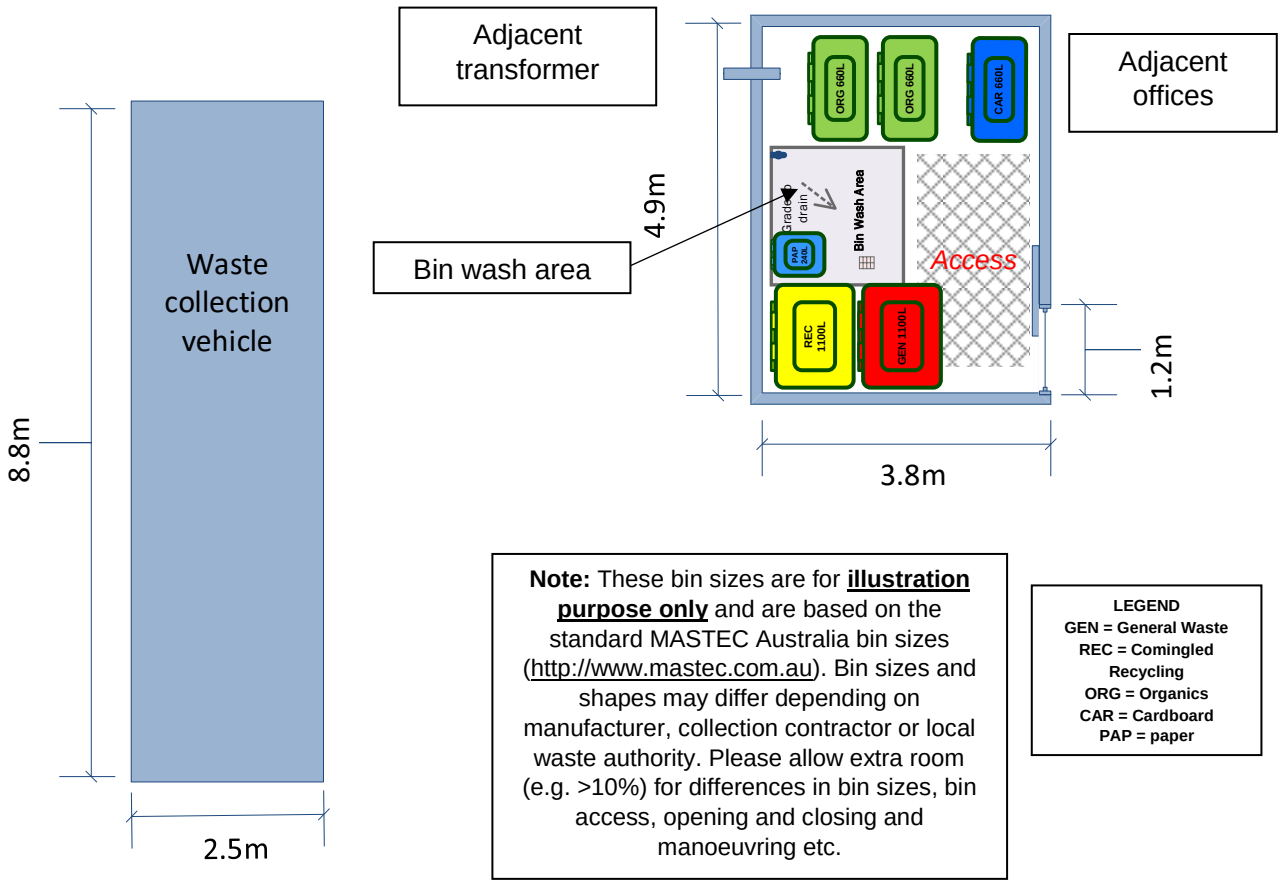



**Figure 4-2: Preliminary drawing of the chute room with an example bin configuration**

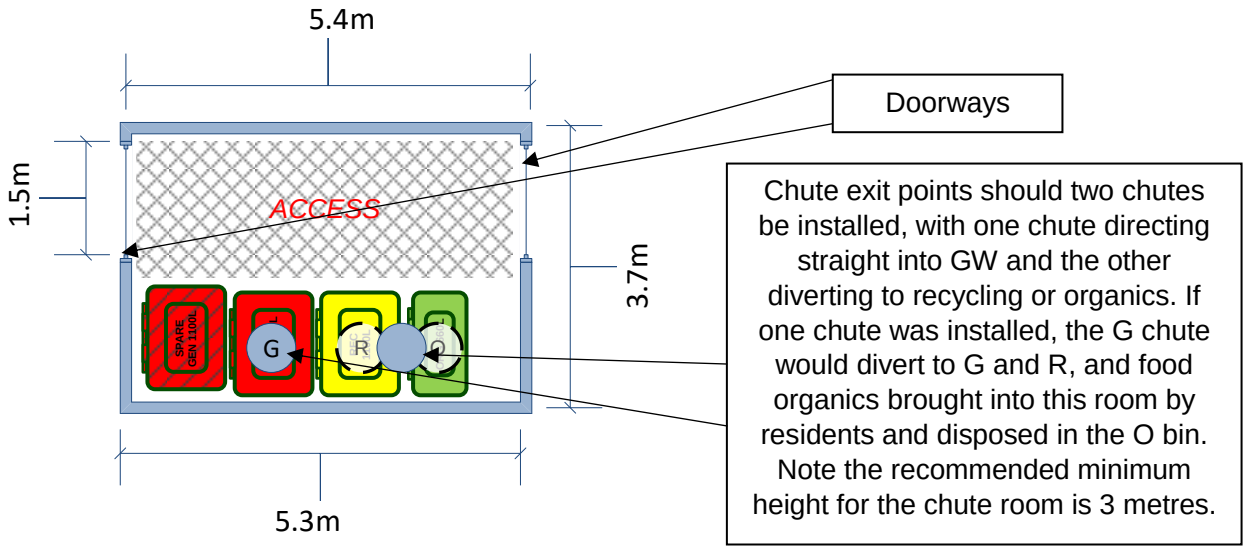
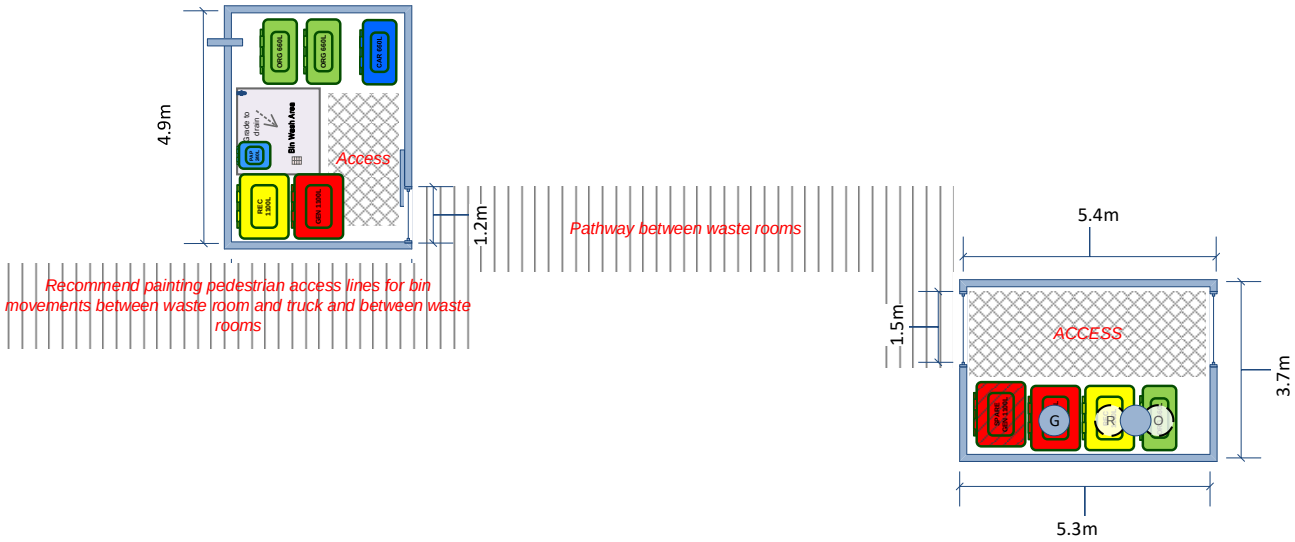


**Figure 4-3: Suggested access pathway from the chute room to the waste collection room**




## 4.3 Bin Wash Area

A bin wash area is recommended to keep the bins clean and reduce odour. We note that the updated plans include a bin wash area in the waste collection room. For reference, it is recommended the bin wash area:

- Is sloped to a drain leading to the sewer,
- Has an installed tap with mains supply and a hose nearby,
- Is at least 2m x 2m, and
- Is slip resistant to prevent slippage during washing.

Note that line marking and bunding is not required around the bin wash area, and bins can be stored on top of the bin wash area in the waste room. During washing, other bins can be placed outside the waste collection room while bins are washed in the waste room. We have included a potential bin wash area in the indicative drawing above within the waste room (see Figure 4-1).

Please note that alternatively, it is possible for the bin wash area to be installed outside the waste room. It may also be possible for the waste contractor to be contracted to provide this service (either on-site or off-site).

# 5. Waste Management System (WMS)

## 5.1 Overview of the System

To effectively manage the waste generated at the site, an appropriate Waste Management System (WMS) is required. The WMS consists of:

- User storage of waste
- Waste transfer to common disposal area
- Aggregation and storage of this waste
- Waste/bin collection.

The below tables provide an outline of the waste management system for each land use. This is based on the site yield data collected and waste management steps recommended in the South Australian Better Practice Guide – Waste Management in Residential or Mixed Use Developments (Office of Green Industries SA, 2014).

## 5.2 Residents

| | WMS step | WMS Notes |
|---|---|---|
| **Waste storage and transfer pathways for:**<br>• General waste<br>• Co-mingled recycling<br>• Food organics | **1 – User disposal and storage** | • Each apartment would have their own bins consisting of small-medium general waste and recycling bins (e.g. 20-60L), as well as kitchen caddies with compostable bags for food scraps to sort and temporarily store waste. |
| | **2 – Transfer pathway to common disposal area** | • Residents would transfer waste from their apartments to the chute on their respective floor. The chute is located in the hallway to the northern stairwell and the distance from the front door to the chute ranges up to approximately 25 metres.<br>• If two chutes or a food organics bin on each floor were available, residents could dispose general waste, comingled recycling and food scraps on each floor. Alternatively, food scraps would need to be taken to a food organics bin located in the ground floor chute room. This would be accessed via the lift and through the corridor behind the commercial tenancies. Note that the Better Practice Guide recommends common disposal points be no more than 30 metres from front door to disposal point. |
| | **3 – Aggregation and storage** | • The waste would be stored in the chute room on the ground floor and then transferred to the waste collection room on the ground floor by Building Services.<br>• Note that the Better Practice Guide recommends transfer routes be free of obstructions and steps, at least 1.25m wide and a slope of no more than 1:10. |
| | **4 – Waste Collection** | • Waste may be collected via the private lane, less than 10 metres from the waste collection area on the ground floor. Note again that the Better Practice Guide recommends transfer routes be free of obstructions and steps, at least 1.25m wide and a slope of no more than 1:10.<br>• The truck will enter the site from Hart Avenue by reversing into the private lane on site, park, load bins to the rear of the vehicle from the waste room, return the bins to the waste room, exit the private lane onto Hart Avenue in a forward direction.<br>• Truck swept paths and potential parking restrictions are to be confirmed by the Traffic Engineer. |

## 5.3 Commercial entities within the building

| | WMS step | WMS Notes |
|---|---|---|
| **Waste storage and transfer pathways for:**<br>• General waste<br>• Co-mingled recycling<br>• Organics (food) recycling<br>• Cardboard recycling<br>• Paper and confidential paper recycling. | **1 – User disposal and storage** | • Each land use would have its own bin station to temporarily store waste.<br>• These bins will be small-medium size (e.g. 40-80L general waste in bags and food organics in compostable bags and cardboard to be placed within the comingled recycling bins within or near the room where it is generated) to sort and temporarily store waste.<br>• Bulky cardboard items can be taken directly to the bin room and disposed of within the 660L cardboard recycling bins.<br>• Offices would store paper and confidential paper recycling in 240L and/or 140L bins in the offices. |
| | **2 – Transfer pathway to common disposal area** | • Staff from each commercial tenancy would transfer the waste from respective premise to the waste storage room on the ground floor.<br>• This would be via the rear hallway and into the car park. |
| | **3 – Aggregation and storage** | • The waste would be stored in the waste collection room on the ground floor. |
| | **4 – Waste Collection** | • Waste may be collected via the private lane, less than 10 metres from the waste collection area on the ground floor. Note that the Better Practice Guide recommends transfer routes be free of obstructions and steps, at least 1.25m wide and a slope of no more than 1:10.<br>• The truck will enter the site from Hart Avenue by reversing into the private lane on site, park, load bins to the rear of the vehicle from the waste room, return the bins to the waste room, exit the private lane onto Hart Avenue in a forward direction.<br>• Truck swept paths and potential parking restrictions are to be confirmed by the Traffic Engineer.<br>• Office paper bins would be collected from the offices and loaded into the truck by the waste contractor, or brought to the waste room by building services when ready for collection. |

# 6. Collection Requirements and Vehicle Movements

## 6.1 Collection Vehicle Requirements

The collection vehicles expected for waste collection at this development would generally be:

- Rear-lift trucks – for collection of routine waste, comingled recycling and food organics streams;
- Pan-tech or flat-bed trucks – for collection of at-call waste streams, if required.

Examples of the likely truck dimensions are provided in the Table 6-1 below to assist the Traffic Engineer/Consultant in ensuring that the collection area can accommodate the waste and recycling collection vehicles, and that vehicles can enter and exit the area safely.

In addition to the truck length, the parking area will need to accommodate at least 2m behind collection vehicles for waste bin loading.

Collection vehicle dimensions and operating requirements vary between waste collection contractors. The client would be required to ensure that the collection vehicle used by the waste collection contractor servicing the development is able to accommodate for the Service Yard and other requirements before collection can begin.

**Table 6-1: Likely dimensions and turning circles of waste collection vehicles that would be required to access the collection area.**

| Likely dimensions and turning circles of waste collection trucks | | |
|---|---|---|
| | **Rear-lift truck (to collect bins up to 1100L)** | **Pan-tech/flat-bed* (to collect hard waste/E-waste)** |
| **Dimensions** | 3.6m (h) x 2.5m (w) x 8m – 8.8m (l) plus 2m space at the rear to load bins | 4.5m (h) x 2.5m (w) x 8.8m (l) |
| **Vehicle height in operation** | Up to 4m | Up to 4.5m |
| **Vehicle turning circle** | 18-25m | 10m |

**Note: Pantech/flatbed vehicle dimensions are based on Australian MRV standard specifications - AS 2890.2-2002*

## 6.2 Estimated number of waste vehicle movements per week

We have estimated that there would be approximately 13 waste collection vehicle movements per week at the site (including paper pick up services). This is based on the estimated waste and recycling volumes and service frequency described above. Note that the total waste collection vehicle movements per week is estimated to be 10 if paper and cardboard was placed in the co-mingled recycling bins, instead of having separate collections for these streams. These estimated vehicle movements do not include an on-call of infrequent services such as hard waste/E-waste collection and confidential paper recycling.

# 7. Supporting Documentation and Design Details

The following information would need to be provided in support of this WMP.

1. Building plans confirming:
    - The size and layout of the waste rooms, including doorways.
    - Transfer pathways for safe and efficient movement of bins/waste between waste rooms and locations for collection.
    - Other land uses.
2. Traffic Consultant to confirm:
    - Parking, loading/unloading and manoeuvring for waste collection vehicles utilising the collection area on the private lane.

# Appendix 1: Estimated Waste Generation Volumes by Land Use and Waste Stream

| | Estimated Waste Generation Volumes (Litres Per Week) by Land Use & Waste Stream (All Land Uses) | | | | | |
|---|---|---|---|---|---|---|
| | **Land Use** | **Residential** | **Commercial** | **Commercial** | **Commercial** | **Totals** (Litres Per Week) |
| | **Development Land Use** | ***Apartments*** | ***Café*** | ***Retail*** | ***Office*** | |
| | *WRGR Classification* | *Residential (High Density)* | *Café/Restaurant* | *Retail (Greater than 100m2)* | *Offices or Consulting Rooms* | |
| **Waste Stream** | **General Waste** | 3,400 | 2,800 | 1,200 | 300 | 7,700 |
| | **Co-mingled Recycling** | 2,800 | 500 | 300 | 100 | 3,700 |
| | **Organics (Food) Recycling** | 1,100 | 3,700 | 60 | 50 | 4,900 |
| | **Cardboard Recycling** | NE | 1,400 | 900 | NE | 2,300 |
| | **Paper Recycling** | NE | NE | NE | 200 | 200 |
| | **Confidential Paper Recycling** | NE | NE | NE | 20 | 20 |
| | **Hard Waste** | 800 | NE | NE | NE | 800 |
| | **E-waste** | 100 | NE | NE | NE | 100 |
| **Total Site Volume** (Litres per Week) | | **7,300** | **8,400** | **2,500** | **700** | **19,700** |

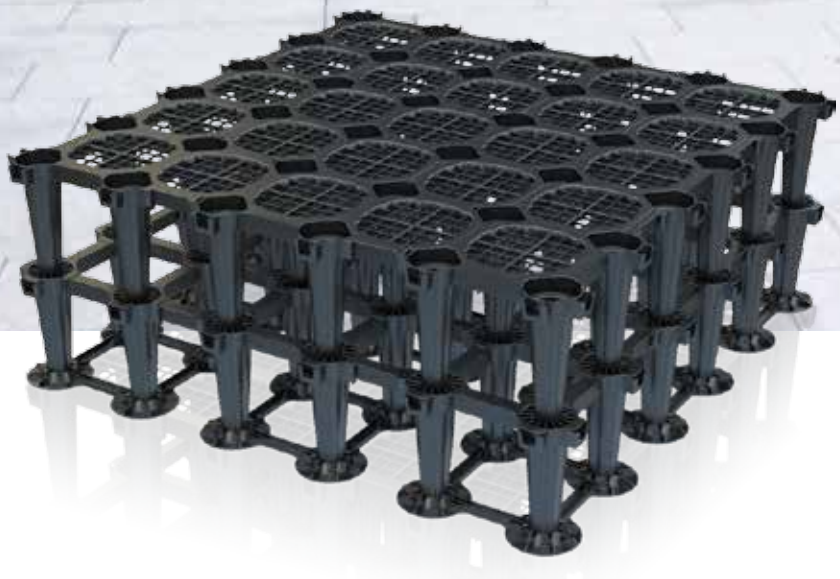
**Note: Totals have been rounded to better reflect estimates and may not equate*

NE = Not Estimated as Not Required

# Stratavault™

## LEADING THE WAY IN ADVANCED STRUCTURAL SOIL CELLS

**Healthy trees in the urban environment**



citygreen™
URBAN LANDSCAPE SOLUTIONS

*transforming grey spaces into green*

# Leading the way in advanced structural soil cells

**For healthy trees in urban environments**

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*

# “Citygreen® systems are dedicated to the successful establishment of trees in cities”

## Advanced Structural Soil Cell System For Tree Pits

Trees in cities are almost universally seen as a very desirable, indeed hugely beneficial part of our lives. And probably the most critical factor in tree health and longevity, is the provision of enough quality soil for the tree roots. Providing for this volume of uncompacted soil beneath pavements is an issue that aborists, landscape architects and engineers have been debating for decades.

Citygreen’s® modular Stratavault system employs advanced design geometry and reinforced copolymers to produce an incredibly robust, skeletal matrix. This matrix has been tested by Finite Element Analysis, as well as physical Ultimate Load tests at university. These test results have been verified by consulting engineers to provide adequate support for pavement loads.

## Tree Root Systems

### What they look like

Tree root systems are much more extensive than you may realise. Current accepted knowledge is that the roots typically occupy an area two to three times greater than the radius of the tree canopy. Root systems also occupy a relatively shallow soil strata being the top 400mm-800mm of soil. Presence of oxygen is of prime importance, with a huge volume of fibrous feeder roots gathering oxygen, moisture and minerals for the life of the tree, while large structural roots provide anchorage and balance for the huge leafy structure above ground.

## Tree Root Systems Need Soil

### How much?

Soil volume requirements for trees can be estimated using several methods. As stated earlier, in natural environment a root system can extend two to three times the radius of the tree canopy.

Probably the simplest way of calculating a minimum required soil volume is to take the projected canopy area of the mature tree, multiplied by a depth of 0.6m. The shape of this area can be configured to suit the particular site.

Other Methods are based on mature trunk calliper, and are possibly more accurate as they provide for different foliage shapes. The old method of providing an area the size of the pavement opening is clearly insufficient, and commits the tree to an untimely death.

**ROOT SYSTEMS: WHAT THEY CAN DO TO STAY ALIVE**

Tree roots have possibly earned an unfair reputation for damaging built structures... sure they have enormous heaving force, and centuries of history have illustrated the expansive power of tree roots in the cities of man. Armed with our new-found knowledge of the enormous size of tree root systems, we must find ways of providing sufficient quality soil volume for trees in our cities.

"Stratavault treepits may be utilised wherever trees are being planted in paved areas"

**WHY DO TREES OR PAVEMENTS FAIL?**

Tree failure is pretty common the world over. Possibly the worst culprit is simply insufficient quality soil volume, along with soil compaction, insufficient drainage, lack of aeration and restrictive pavement openings. Other factors include neglect during establishment, vandalism, wind throw, drought and pollution. The heartening news is that all of these factors can be anticipated at design stage. Trees are remarkable survivors, if they have a chance.

## Applications For Stratavault Treepits

Essentially, Stratavault treepits may be utilised wherever trees are being planted in paved areas. There are many areas where the application of this system can assist with the healthy growth of trees in cities:

Carparks, Roadways, Footpaths, Plazas & Medians.

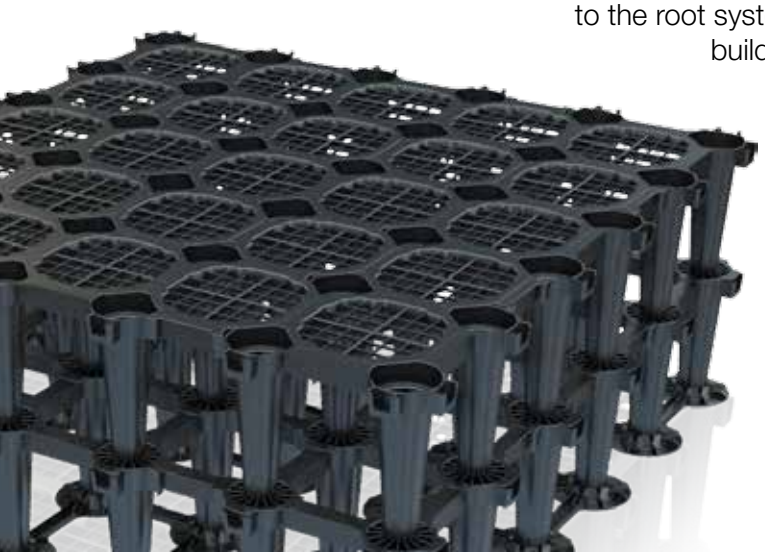
### Linked treepits

**Shared root space plus permeable pavements**

For many years arborists have recognised that tree root systems can share space and overlap. This can permit designers to place trees in continuous rooting trenches, or linked tree pits. There can also be economies gained in excavation and installation times. Width of such "root trenches" needs to be carefully monitored relative to mature tree height and canopy width, particularly in high wind areas. Local aborists can advise on this. Innovative use of permeable pavement above the linked treepitis is to be commended, providing aeration to the tree root system and harvesting of valuable rainwater and surface flow. There are several very critical points to be included in design of these treepits, and it is strongly recommended that assistance be sought from a Citygreen® design consultant.

### Water-sensitive urban design

There are several additional ways of utilising valuable rainfall to enhance the growth of trees in our cities, with some slight differences caused by geographical location. Kerb or road grates and surface strip drains can intercept rain water for distribution to the root system via perforated pipe. Roof water from nearby buildings can also be piped to the Stratavault structural root zone, or permeable pavements and subgrades can be incorporated as stated above. Harvesting of stormwater at the source is strongly recommended, and treepits play a vital part in this .There are several very critical points to be included in design of these treepits, and it is strongly recommended that assistance be sought from a Citygreen® design consultant.



# Applications

# “Advanced engineering and design provides over 90% uncompacted soil volume”

**STRATAVAULT:**
**KIND TO THE ENVIRONMENT**

Recycled material

Citygreen® systems are dedicated to the reduction of harmful waste. Stratavault structural modules are made from 100% post industrial waste, thereby utilising material that could have been consigned to landfill.

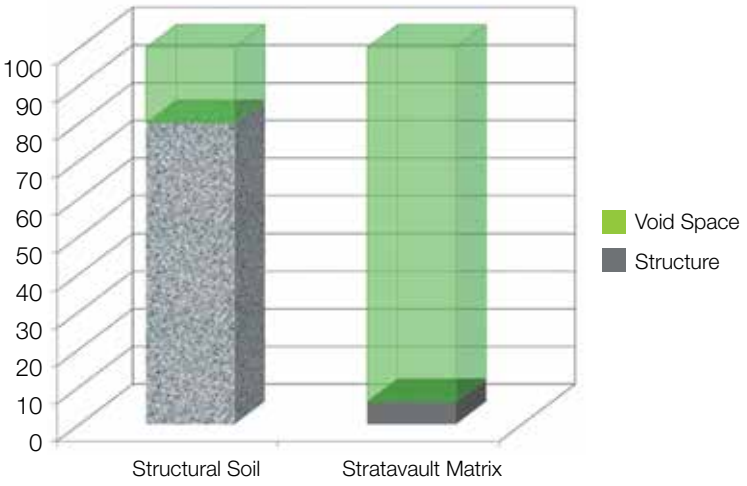
## Stratavault

### Apertures

This sixth generation Root Cell has very generous apertures for root growth, without sacrificing the structural integrity of the matrix. Stratavault apertures are large enough to permit some common conduits, service pipes and aeration systems to be incorporated within the structure.

### Growth zone

The open, skeletal structure of the Stratavault matrix provides an optimal growth zone for tree roots. In excess of 90% of the total volume is available for tree root growth.



### Compared to rock/soil matrix

Early research utilised a rock and soil matrix to

provide support for pavement, while permitting some root growth within the pavement. Structural Cells have moved this principle forwarded by replacing the rock (80% of the total volume) with engineered modules (10% of total volume).

# Stratavault tree pits for healthy trees

## For the long term success of urban trees

*

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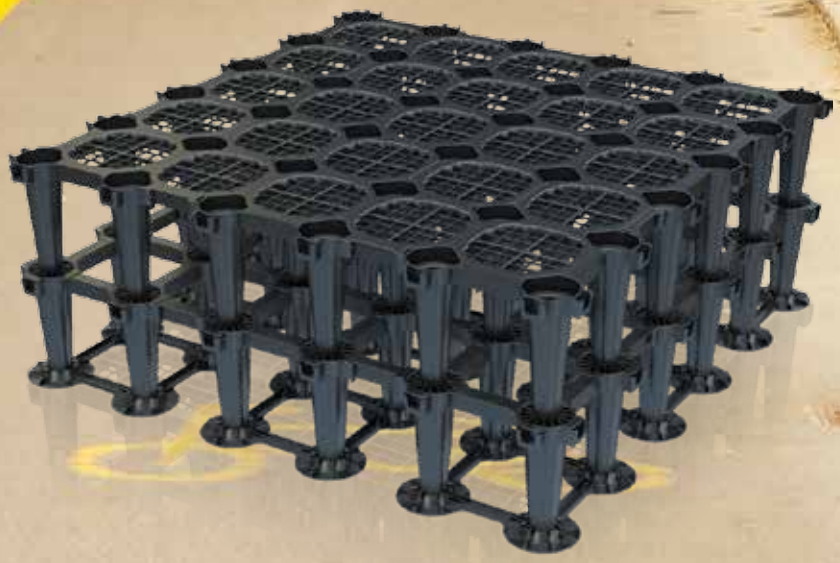
# Stratavault – the strongest large soil cell available globally

**Advanced engineering & design**



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# “The Stratavault system is designed and tested to support 300kPa loads (‘30 Series’) and 600kPa loads (‘60 Series’)”

## Stratavault Structural Modules

### How they work

Structural Cells are modular units that assemble to form a skeletal matrix that supports relevant pavement loads while providing large volumes of soil within the structure for root growth.

### Compressive load

Stratavault modules have been designed to support enormous vertical loads, so that tree root systems can be brought closer to the pavement surface.

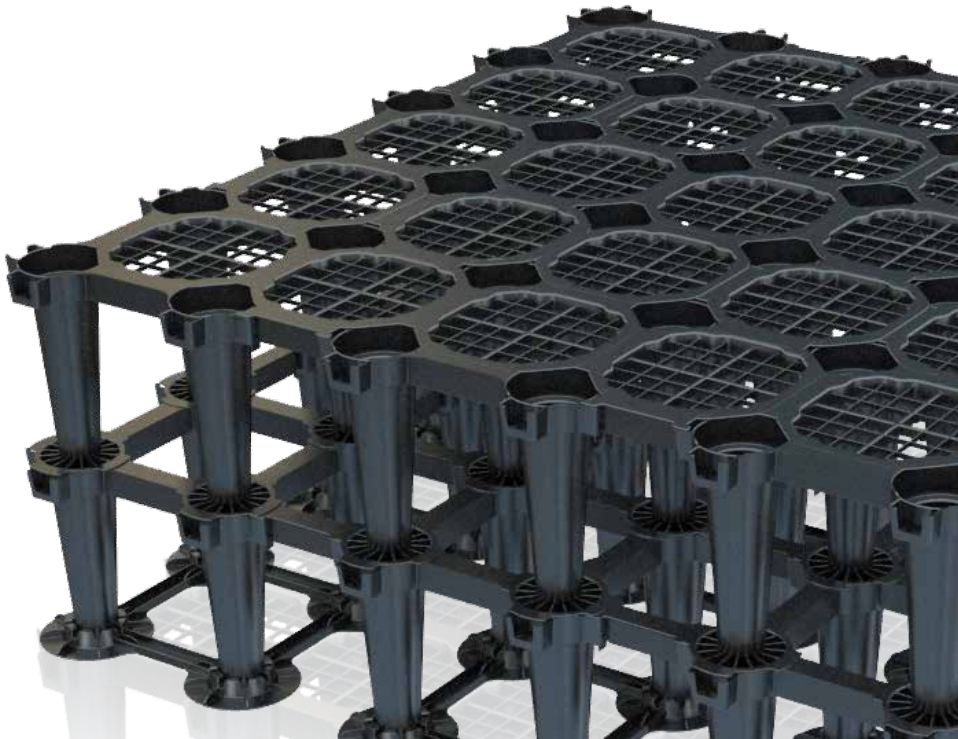
### Lateral load

As mentioned earlier, lateral forces must also be provided for in engineering design of tree pits. Stratavault units lock together to form a monolithic structure with excellent modular strength, both vertically and laterally.

### Interlocks

Positive and secure connectors are a feature of the Stratavault patented design both vertically and laterally. Stratavault modules are simple and fast to click together, producing an integrated matrix.

Extensive computer modeling and laboritory testing have established Stratavault as the strongest large soil cell.



# Backed with technical support and efficient installation

**We've made the complex simple**

## Technical Assistance and Design

### CAD details, custom, standard

Treepit detailing is a free service that is available to all designers and specifie's. After an initial consultation, you will be provided with a fully detailed and dimensioned set of plans showing plan view and sectional views of your design in CAD and PDF format for inclusion in your project documentation. Standard treepit details are also available for your own library, free of charge.

### Engineering design assistance

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From the earliest days of ArborSystem treepits, our consultants have been visiting sites to provide training for installers. This service is available at no charge in most regions, instructs installers in the most efficient methods, giving us first hand interaction with the landscape industry and peace of mind as to projects.

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“Units snap together quickly and easily, with labour times being reduced drastically.”

## Stratavault Efficiency

### Lower cost installation

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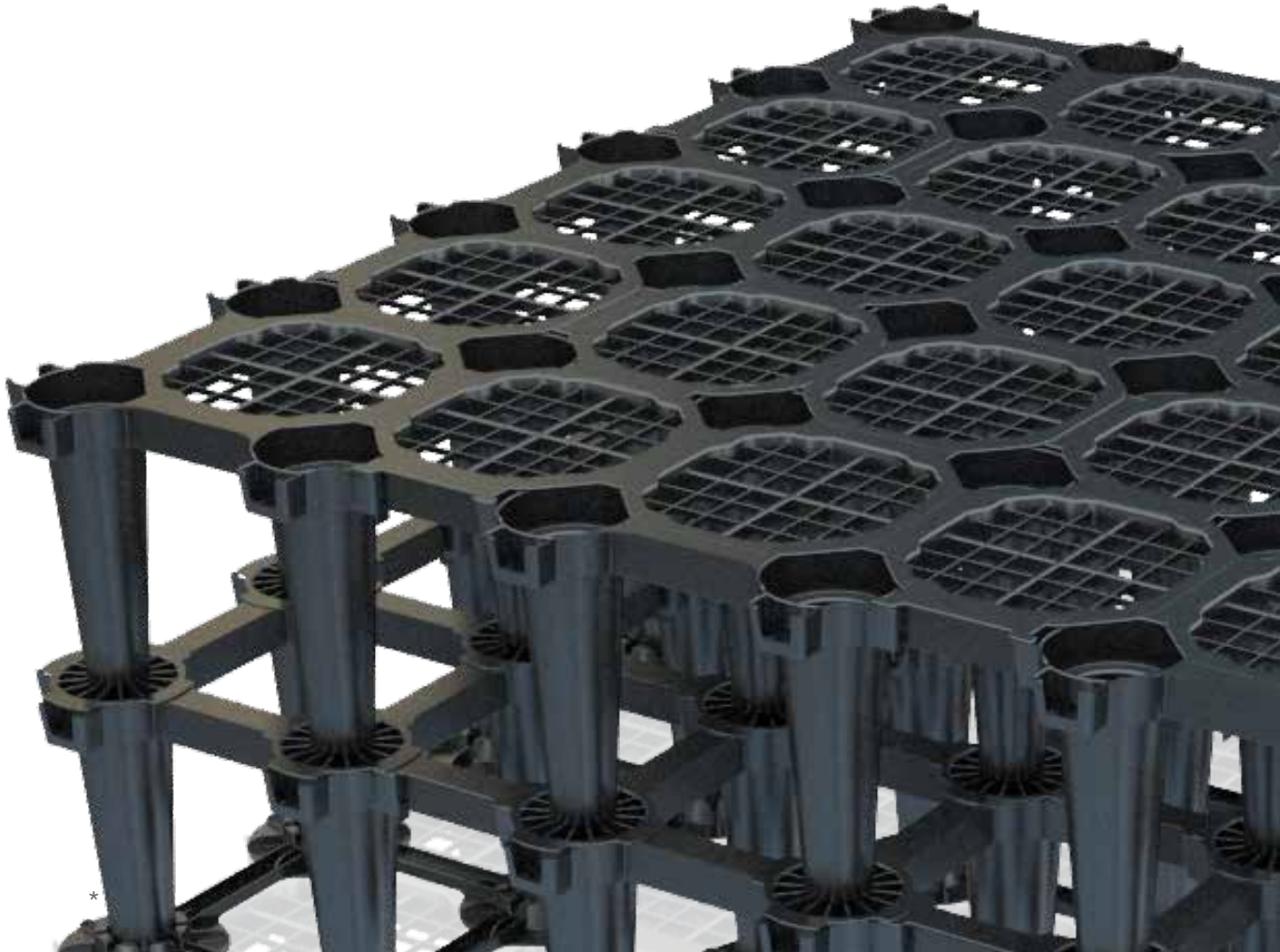

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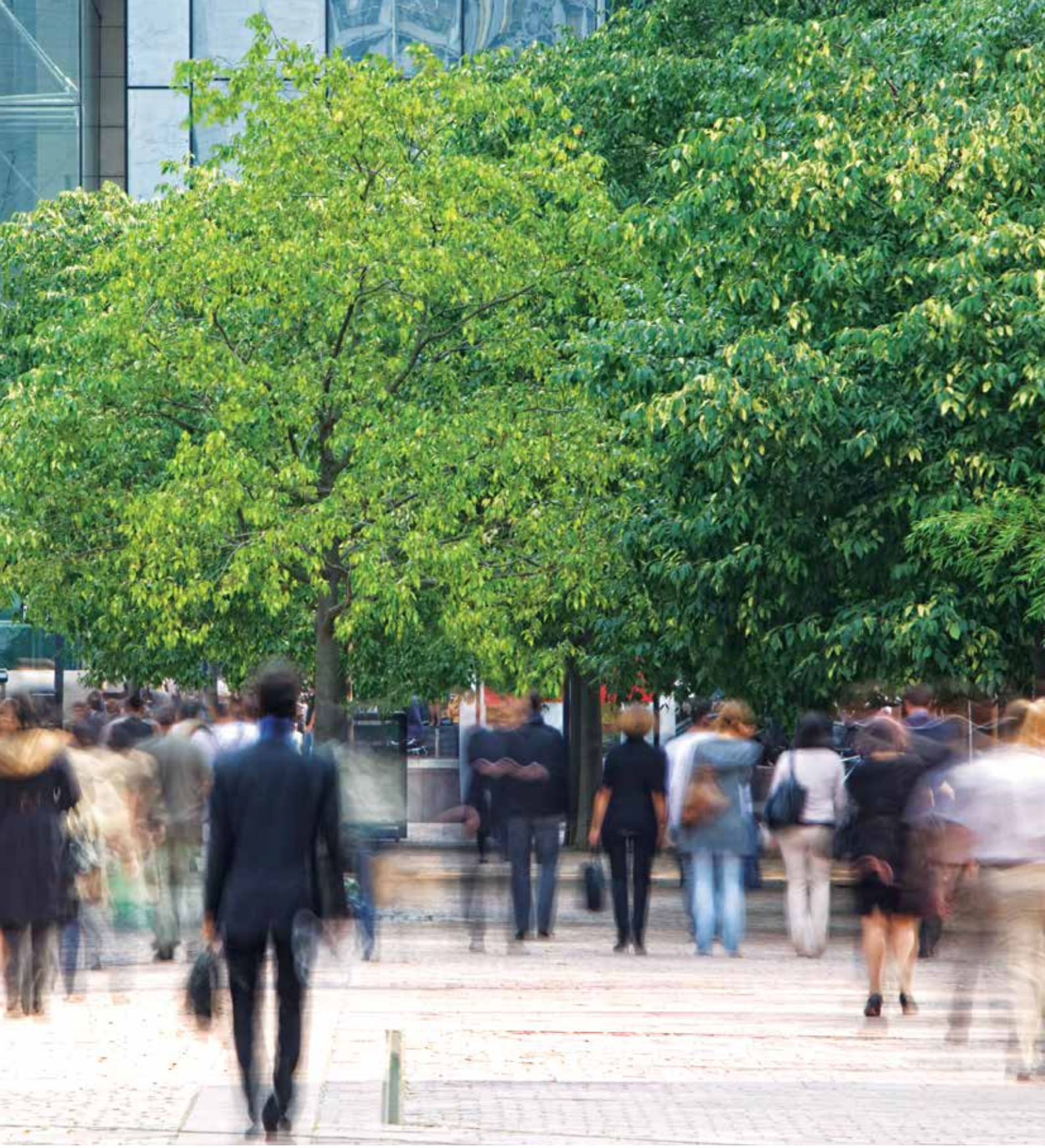

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## Woehle, Karl (DPTI)

**From:** Shirai-Doull, Aya (DPTI)
**Sent:** Wednesday, 7 March 2018 2:17 PM
**To:** Woehle, Karl (DPTI)
**Subject:** 246 Unley Road - AGA informal response

Karl,

This email is in response to the amended documents provided on 27 February and 1 March 2018.

I acknowledge that the design amendments are proposed to address some of the concerns outlined in the Associate Government Architect's referral letter dated 10 January 2018 and the concerns raised at the SCAP hearing on 19 January 2018.

These changes include;

- 2.1 metre setback to Hart Avenue.
- Reconfiguration of the south facing balconies to provide sufficient separation and futureproof the balconies from a potential adjoining development.
- Finishes and materials sample board has been provided.

In addition, I acknowledge the following improvements have been made.

- Provision of visual breaks in the podium on the Unley Road, Hart Avenue and western elevations.
- Review of vertical screens to balconies to direct viewing angles and reduce overlooking impacts.

Most importantly, the following concern is not addressed.

- Building height.

On the whole, I welcome and support the amendments proposed, however I remain concerned about the appropriateness of the proposed height (seven storey, 26.8 metre tall in five storey, 18.5 metres area), given the proposal is one of the first to be considered under the new policy settings for the area. I maintain my opinion that the proposed height is inconsistent with the envisaged future character of the locality.

Please let me know if you would like to discuss further.

Kind regards,

Aya Shirai-Doull on behalf of Nick Tridente (Associate Government Architect)

**Aya Shirai-Doull**
Senior Design Advisor
Office for Design + Architecture SA
Department of Planning, Transport and Infrastructure
**T** 08 8402 1853 (internal 21853) • **E** aya.shirai-doull@sa.gov.au
Level 1, 26-28 Leigh Street, Adelaide SA 5000 • GPO Box 1533 Adelaide SA 5001 • DX 171 • www.dpti.sa.gov.au

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*In reply please quote* 2017/01926/01, *Process ID:* 480920
*Enquiries to* Marc Hryciuk
*Telephone* (08) 8226 8395
*Facsimile* (08) 8226 8330
*E-mail* dpti.luc@sa.gov.au

Government of South Australia
Department of Planning, Transport and Infrastructure

**SAFETY AND SERVICE – Traffic Operations**

GPO Box 1533
Adelaide SA 5001

Telephone: 61 8 8226 8222
Facsimile: 61 8 8226 8330

ABN 92 366 288 135

07/03/2018

Mr Karl Woehle
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Dear Mr Woehle,

## SCHEDULE 8 - REFERRAL RESPONSE

| | |
|---|---|
| **Development No.** | 090/M008/17 |
| **Applicant** | Catcorp Pty Ltd |
| **Location** | 246 Unley Road, Unley |
| **Proposal** | Seven Storey Mixed Use Building |

I refer to the above development application forwarded to the Safety and Service Division of the Department of Planning, Transport and Infrastructure (DPTI) in accordance with Section 37 of the *Development Act 1993*. The proposed development involves development adjacent a main road as described above.

The following response is provided in accordance with Section 37(4)(b) of the *Development Act 1993* and Schedule 8 of the *Development Regulations 2008*.

### THE PROPOSAL

The application proposes to demolish all existing structures and construct a seven storey mixed use building including parking and landscaping. DPTI has previously provided comments regarding the proposal on 30/11/2017. As a result, amended plans addressing the issues raised have been submitted.

### CONSIDERATION

The subject site abuts Unley Road, an arterial road under the care control and management of the Commissioner of Highways, as well as Hart Avenue, a local road under the care, control and management of City of Unley. Unley Road is identified as a Major Cycling Route, High Activity Pedestrian Area, High Frequency Public Transport Corridor and Peak Hour Route under DPTI's *'A Functional Hierarchy for South Australia's Land Transport Network'*. At this location Unley Road has an AADT of 26,100 vehicles per day (2.5% commercial vehicles).

### Road Safety and Access

It is DPTI policy to minimise the number of access points on the arterial road network in the interests of road safety. The subject site currently has no direct access to/from Unley Road. As all access is via Hart Avenue, the access arrangement is consistent

with the above policy. No direct vehicular access to/from Unley Road should be permitted.

It is noted that the layout of the development allows for connection to be established between Hart Avenue and Opey Avenue. This is supported but will need to be formalised via rights-of-way or similar as part of any future land division associated with the subject development. The amended proposal has also reduced the number of crossovers to Hart Avenue. This arrangement will improve both pedestrian and vehicular safety at this location.

As discussed in the department's previous response, Hart Avenue is relatively narrow and simultaneous two-way access is limited to immediately adjacent the Unley Road / Hart Avenue junction due to the presence of on-street parking along Hart Avenue. This parking also impacts on the potential for service vehicles to safely access the site. Consequently, in order to ensure that simultaneous two-way vehicle movements are achievable along the subject section of Hart Avenue, on-street parking on both sides of the road should be banned between the Unley Road / Hart Avenue junction and the access to the site. These parking bans will need to be in place prior to completion of the development. It may also be necessary to enact these bans prior to the commencement of construction to ensure the safe movements of construction vehicles.

**UnleyLINK**

On 6 July 2015, the Minister for Transport and Infrastructure released the revised Integrated Transport and Land Use Plan (ITLUP). The Plan is designed to guide private, Federal, State and Local Government investments into the transport system for the next 30 years, and play a key role in ensuring this is fully integrated with land use and strategic infrastructure planning.

The Plan identifies UnleyLINK (a tram line running from the City, along Unley Road and Belair Road) as a medium to long term project. The exact timing of this project has yet to be determined and details of the road and tram track layout along Unley Road will be subject to further investigations and consultation. Subsequently, a number of potential access impacts for Unley Road and therefore the subject site may occur.

**Road Widening**

This site is affected by a requirement shown on the Metropolitan Adelaide Road Widening Plan (MARWP) for a 4.5 metres x 4.5 metres cut-off at the Unley Road / Hart Avenue corner of this site for possible future road purposes. The consent of the Commissioner of Highways under the Metropolitan Adelaide Road Widening Plan Act is required to all new building works located on or within 6.0 metres of the possible requirement.

In the department's previous correspondence, it was recommended that a 2.1 metres setback be provided along the Unley Road frontage of the site, together with a 4.5 metres x 4.5 metres cut-off at the Unley Road / Hart Avenue corner. Consequently, the applicant has reviewed the setbacks at this location. In particular, the plan now provides a 4.5 metres x 4.5 metres corner cut-off at ground level and a 3.0 metres x 3.0 metres corner cut-off at the basement and above ground levels. The amended plan also provides a 2.1 metres setback along Hart Avenue to improve activation of the locality. Whilst the department would have preferred the 2.1 metres setback to be provided along Unley Road, the proposed setbacks are supported.

## CONCLUSION

In-principle no objection is raised to the proposed development subject to the following conditions of approval being attached to any approval.

## ADVICE

The planning authority is directed to attach the following condition to any approval:

1. All built form (both above and below ground level) shall be set back as shown on Tectvs plans:

    - Number 27080 Drawing PO1, Revision 1.3 dated February 2018;
    - Number 27080 Drawing PO2, Revision 1.2 dated February 2018;
    - Number 27080 Drawing PO4, Revision 1.1 dated February 2018.

The planning authority is advised to attach the following conditions to any approval:

2. All canopies along the Unley Road frontage shall provide a minimum of 600mm setback from the back of kerb on Unley Road.

3. A Traffic Management Plan for the construction period of the development shall be produced to the satisfaction of DPTI and Council prior to the commencement of construction. This plan shall detail the types, volumes and distributions of traffic and how they will be managed. All traffic movements shall be in accordance with this plan.

4. Any excavation adjacent to roads shall be designed and undertaken in a manner that does not impact on the structural stability or safety of the roads. Any damage to road assets caused by the development shall be repaired to the satisfaction of the relevant road authority at the applicant's cost.

5. All car parking and internal manoeuvring areas shall be in accordance with AS/NZS 2890.1:2004 and 2890.6:2009.

6. All commercial vehicle facilities shall be designed in accordance with AS 2890.2-2002.

7. All materials and finishes shall not be permitted to result in glare or other effects that will result in the discomfort or impairment of road users.

8. Stormwater run-off shall be collected on-site and discharged without jeopardising the integrity and safety of the adjacent roads. Any alterations to the road drainage infrastructure required to facilitate this shall be at the applicant's cost.

The following note provides important information for the benefit of the applicant and is required to be included in any approval:

i. The subject site is affected by a requirement shown on the Metropolitan Adelaide Road Widening Plan (MARWP) for a 4.5 metres x 4.5 metres cut-off at the Unley Road / Hart Avenue corner of this site for possible future road purposes. The consent of the Commissioner of Highways under the Metropolitan Adelaide Road Widening Plan Act is required to all new building works located on or within 6.0 metres of the possible requirement.

As the development encroaches within the above areas, the applicant should fill out the attached form and return it to DPTI, along with three copies of the approved plans for consent purposes.

Yours sincerely,

for **MANAGER, TRAFFIC OPERATIONS**
For **COMMISSIONER OF HIGHWAYS**

# METROPOLITAN ADELAIDE ROAD WIDENING PLAN ACT, 1972

Government of South Australia
Department of Planning, Transport and Infrastructure

*APPLICATION FOR CONSENT OF THE COMMISSIONER OF HIGHWAYS FOR BUILDING WORK*

Owner's Name _____

Applicant's Name (If not owner) _____

Relationship to Owner (Lessee, Prospective Purchaser, Etc.) _____

Postal Address _____

_____ Postcode _____

**Location of Proposed Building Works (Full Details Required):**

L.T.O. Plan No.: _____ Allotment No.: _____ Section: _____

Hundred: _____ House No.: _____

Street Name _____ Suburb: _____

Certificate of Title

Volume _____ Folio _____

Nature of Proposed Building Work _____

_____

_____

**Proposed Location of Building Work on Land:**

Distance from existing front road boundary to nearest point of building

_____

Distance from existing side boundary (if on corner) to nearest point of building

_____

Total estimated cost of proposed building work $ _____

Estimated cost of proposed building work on land to which the Act applies $ _____

**Signature(s):** _____ (Applicant) _____ (Owner or Authorised Agent) **Date** _____

**Notes:**

1. *Three (3) copies of the **approved** site plan describing fully the nature and extent of the proposal must be forwarded with this application form together with one copy of the notification of the relevant authority's decision to approve the development under the Development Act 1993.*
2. *The Act requires that the consent of the Commissioner of Highways must be obtained for any building work on land to which the Act applies.*
3. *The Act applies to all land shown on the Metropolitan Adelaide Road Widening Plan as possibly required for road widening and all land within six metres of the boundary of that land.*

PLEASE RETURN TO:

COMMISSIONER OF HIGHWAYS
DEPARTMENT OF PLANNING, TRANSPORT AND INFRASTRUCTURE
GPO BOX 1533
ADELAIDE SA 5001

For further information regarding the Metropolitan Adelaide Road Widening Plan Act, please contact DPTI on (08) 8226 8384.

7 March 2018

The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

***Attention: Karl Woehle***
Planning Officer, CBD & Inner Metro Team
Strategic Development Assessment
Department of Planning, Transport and Infrastructure

Dear Sir/Madam

**INFORMAL REFERRAL - FURTHER COMMENTS ON DEFFERRED AMENDMENTS DA 090/M008/17 (APPIAN ID 2397) - 244-246 UNLEY ROAD UNLEY**

Thank you for the opportunity to review the applicant's response to the issues raised by SCAP in deferring consideration of assessment of the above-mentioned application at its 25 January 2018 meeting.

The amended information was forwarded on the 2 March 2018 to the contact officer but was not able to be reviewed until after the 5 March 2018 upon their return from leave. Given comments were requested by the 7 March 2018, time was limited for a comprehensive review.

Council wishes to provide further comment on key matters included in the applicant's response and revised design for consideration as part of the assessment by SCAP.

Concerns remain with a number of planning matters, good design outcomes and impacts upon local road parking and public realm from the proposed revised development at 244-246 Unley Road, Unley, including:

- Building height is unchanged at 7 storeys (overall 24.5 metres and street wall height of 20.6) metres versus policy of 5 storeys (18.5 metres). While levels above street wall (over height) are recessed at top edge from close-by views the increased heights will still be visually dominant from adjacent outlooks and along Unley Road. It also still represents a substantial variation (more than 30%) over derived policy height, desired corridor scale and urban design principles and expectations resolved with the community through the policy amendment process;
- Unley Road context framed on maximum of 5 storeys with intended intensification and rise in scale within District Centre to 5 to 7 storey in dominant southern half (7 to 9 storey only in portion north of Arthur Street);


Civic Centre 181 Unley Road
Unley, South Australia 5061
Postal PO Box 1
Unley, South Australia 5061
Telephone (08) 8372 5111
Facsimile (08) 8271 4886
Email pobox1@unley.sa.gov.au
Website www.unley.sa.gov.au

- Building setback at ground level now at 2.1 metres from Hart Avenue (only required for portion from 20 metres from Unley Road alignment) plus DPTI required corner cut-off of 4.5x4.5metres. This provides relief to Hart Avenue but no important softening landscaping opportunities have been indicated. Further the upper levels have not changed, leaving them in line with the podium, reducing a desired relief and articulation of the building mass;
- Outdoor dining is not indicated and assumed it may be intended to be contained within the site. Any notional overhead portal encroachment in Hart Avenue should be excluded from the plans and approval. There will be severe limitations to the ability for encroachment given the narrow road width, vehicle movement requirements and essential design parameters for the road reserve;
- Overlooking, particularly to adjoining low density high amenity residential areas, requires minimisation by effective design, interruption and screening, not just distance (eg 30 metres only is effective in typical 2 storey scenarios). The additional consideration and vine covered selective vertical screening panels (detailed outline of screen louvres not provided) is positive and may encourage oblique views in some cases but still leaves extensive open viewing opportunities to adjacent residential properties. Limited height and width of proposed trees in the rear driveway limit any effect on higher levels views;
- The commercial floor area (café, retail, office and/or consulting rooms) is reduced, due to the Hart Avenue setback, to 616 NFA (assume indicates Nett Floor Area) whereas scaling from plans indicates the applicable 'Gross Leasable Floor Area' is more like 660m$^2$. At 3 spaces per 100m$^2$ GFA a minimum of 20 spaces are required.
  The available ground level visitor parking has been maintained at 18 spaces (space in south east corner is required turn-around space for dead-end isle) leading to a shortfall of 2 visitor spaces per already favourable discounted mixed use standards (further discounting is unwarranted) and compounded by loss of adjacent available on-street parking.
  This provision does not take account of extra demand from a potential outdoor dining area adjacent to Hart Avenue of say 25m$^2$ (additional 0.75 space) leading to a shortfall equivalent to 3 spaces.
  Development intensity (commercial floor area and building scale) should be reduced accordingly to suit provision.
  The provision addresses the required 15 residential visitor spaces in a complementary peak shared arrangement.
  It should be a condition of approval that spaces in the limited grade visitor parking area not be allocated to ensure optimisation of their efficient utilisation;
- The underground parking areas for the 59 residential apartments (20 x 1 bedroom or < 75m$^2$, 35 x 2 bedroom and 4 x 3 bedroom) requires 65 spaces versus the 64 provided, which includes 4 small spaces and 11 double stacked spaces. For the 59 dwellings proposed this results in 6 dwellings having no on-site parking with only 53 having individual access (11 of the larger dwellings have double stacked provision). Individual access provision should be increased by one or the number of dwellings reduced by one to suit provision in accord with minimum standards;
- An on-site parking shortfall is critical and is compounded by the problems with inadequate and consequential significant loss of potential on-street parking. Hart Avenue is very narrow and the current parking arrangements results in one-way movement. Currently there is a very limited number of movements in the

street and access to the subject site.
With the increased intensity of development, sole access to Hart Avenue, number of vehicle movements and regular large waste vehicle services (average of more than twice per day) retaining the current parking configuration is not appropriate, safe or effective.
At best the applicants proposed reconfiguration results in a net loss of 2 spaces. The recommended parking reconfiguration for safe and appropriate traffic movement will result in a net loss of 8 spaces (half of that available along the adjacent street frontages). The removal of parking on the southern side of the street is preferred to provide for safer left turns into Hart Avenue.
Such loss reinforces the critical need for at least the minimum required parking on-site.
A comprehensive traffic, parking and streetscape study will be required to address the appropriate configuration, management and streetscape (trees and landscaping etc) treatment within Hart Avenue;

- The addition of required deep soil zone (assumed to be at least 7% of the site area) and number of medium scale trees along the western edge of the rear main driveway is positive but of limited effect. A fully resolved comprehensive and softening site landscaping proposal is lacking.
  The tree species / form selection is queried and a more robust and fuller canopy species and number would be suggested as preferable.
  The correlation of the tree positions, driveway configuration and waste truck swept path turning movements are difficult to reconcile, but it appears the trees near Hart Avenue may conflict with the indicated waste truck movements.
  Consideration should be given to an enhanced avenue of fuller canopy trees and areas of under-storey / ground level planting within this large driveway space, and the Hart Avenue streetscape frontage, to ameliorate the expanses of hard paving, a harsh and hot environment, streetscape appearance, quality of the expansive driveway internal space and the amenity for the residential frontages thereto and for pedestrians generally (resident, tenant, staff and visitors).
  It could be an attractive feature and environment.

Council has delegated to the Chief Executive Officer or his nominee(s) the authority to negotiate appropriate outcomes in regard to street trees, future public realm upgrades, canopy encroachments and outdoor dining arrangements should the application be approved and these matters pursued.

Any approval should include a range of reinforcing conditions as raised previously and including:

- Caparking design, dimensions, access/ramps and disable provision be reviewed to improve convenient and efficient on-site accessibility, circulation, space useability and conformity with Development Plan and AS2890;
- Ground level on-site car parking not be allocated in any way, be well signed and remain freely available for all visitors at all times;
- Waste and service vehicles (maximum 8.8 metres length) only visit the site between 7:00am to 7:00pm Monday to Saturday, excluding public holidays and peak traffic periods of 7:00 to 9:00am and 4:00 to 6:00pm Monday to Friday;
- Waste Management to accord with the SA Better Practice Guide for Waste Management for Residential and Mixed Use Developments (Zero Waste) and that

larger 1100 litre and co-mingled bins be used as much as possible to reduce the number of required collections;

- Public realm re-configuration and any damage be resolved with, and approved by, the Council at the expense of the owner/applicant;
- Stormwater management on-site accord with submitted details with a maximum of 8 outlets distributed equi-distant along Unley Road and Hart Avenue frontages;
- A Construction Management Plan be resolved to guide the requirements and operations during construction to address traffic, parking, pedestrian and amenity issues.

In addition it should be added as a note that pursuant to Council's policy it will not grant 'On-street Parking Exemptions' from parking time limits to any new residential premises.

The nature of the large scale mixed use development broadly accords with the Urban Corridor Zone intent. However, the highlighted areas of concern with planning policy accord, proper and good design and council infrastructure matters should be addressed as part of the expected comprehensive assessment by State Commission Assessment Panel.

If there are any queries or need for further explanation or information please contact David Brown, Principal Policy Planner, dbrown@unley.sa.gov.au or 8372 5185.

Yours sincerely

**David Brown**
PRINCIPAL POLICY PLANNER

# Catcorp Pty Ltd C/- Future Urban Group

7 Storey mixed use building comprising of commercial/retail tenancies, residential apartments, ancillary car parking, landscaping and associated site works.

## 244-246 Unley Road, Unley – 090/M008/17

**TABLE OF CONTENTS**


| | PAGE NO |
|---|---|
| **AGENDA REPORT** | 2-26 |
| **ATTACHMENTS** | 27-382 |
| **1: PLANS** | |
| a. Plans & Design Report | 27-87 |
| b. Landscape Concept Plan | 88-97 |
| **2: MAPS & PHOTOS** | |
| a. Policy Areas, Zones and DP Maps | 98-103 |
| b. Site Photos | 104 |
| 3: **APPLICATION DOCUMENTS** | |
| a. Certificate of Title and Filed Plan | 105-116 |
| b. OTR Form | 117-118 |
| c. DA Form | 119 |
| d. Planning Report | 120-172 |
| e. Traffic and Parking Assessment | 173-189 |
| f. Waste Management Plan | 190-208 |
| g. Building Services Design Report | 209-214 |
| h. ESD Report | 215-222 |
| i. Stormwater Management Report | 223-250 |
| j. Acoustic Design Advice | 251-270 |
| **4: AGENCY COMMENTS** | |
| a. Government Architect Comments | 271-275 |
| b. Revised Government Architect Comments | 276-279 |
| c. Commissioner of Highways (DPTI) comments | 280-282 |
| **5: COUNCIL COMMENTS** | |
| a. Unley (City) Council comments | 283-300 |
| b. Revised Unley (City) Council Comments | 301-303 |
| 6: REPRESENTATIONS | 304-321 |
| 7: RESPONSE TO REPRESENTATIONS, Council, ODASA and DPTI | 322-331 |
| 8: ADDITIONAL INFORMATION | |
| a. Original Application Plans | 332-343 |
| 9: DEVELOPMENT PLAN PROVISIONS | 344-382 |

## OVERVIEW

| | |
|---|---|
| **Application No** | 090/M008/17 |
| **Unique ID/KNET ID** | Appian 2397 2017/18253/01 |
| **Applicant** | Catcorp Pty Ltd C/- Future Urban Group |
| **Proposal** | Mixed use development comprising of commercial tenancies, residential apartments, ancillary car parking, landscaping and associated building works |
| **Subject Land** | 244-246 Unley, Road Unley |
| **Zone/Policy Area** | Urban Corridor Zone, High Street Policy Area |
| **Relevant Authority** | State Commission Assessment Panel |
| **Lodgement Date** | 14 August 2017 |
| **Council** | City of Unley |
| **Development Plan** | Unley (City) Development Plan [Consolidated 4th July 2017] |
| **Type of Development** | Merit |
| **Public Notification** | Category 2 |
| **Representations** | Nine (9) representations of which four (4) are valid, no representors wish to be heard. |
| **Referral Agencies** | Associate Government Architect and Commissioner of Highways (DPTI) |
| **Report Author** | Karl Woehle |
| **RECOMMENDATION** | Development Plan Consent subject to conditions |

## EXECUTIVE SUMMARY

The applicant seeks Development Plan Consent for the construction of a 7 storey mixed use building comprising of commercial / retail tenancies, residential apartments, ancillary car parking, landscaping and associated building works in the High Street (Unley Road) Policy Area of the Urban Corridor Zone at 244-246 Unley Road, Unley

The proposed development is a merit kind of a development that triggers a statutory referral to the Associated Government Architect (AGA), Commissioner of Highway (DPTI) and a non-mandatory referral to the City of Unley Council. The application is a Category 2 form of development. During the public notification nine (9) representations were received, four (4) were valid and were generally in support of the proposed development.

The overall building height is 7 storeys (including ground) or 24.5m to the roofline, which exceeds the maximum height of 18.5 metres or 5 storeys set out in the High Street (Unley Road) Policy Area. It is acknowledged that the proposed development does not adjoin the Residential Streetscape (Built Form) Zone to west and has been sited to ensure significant separation distances. As a result the apartment balconies on level one are setback approximately 15 metres from the boundary and 30 metres to the Residential Streetscape (Built Form) Zone. The proposed built form is within the 30 degree envelope plane, as required by the Development Plan.

The Associate Government Architect (AGA) responded to the referral and is of the opinion that the proposed development does not exhibit an exemplary design outcome. Particularly in terms of massing and architectural expression to manage the physical and visual impacts of the scale and bulk. Concern was also raised on the lack of setback to Hart Avenue boundary beyond 20 metres from Unley Road.

The proposed development is contemporary in nature and exhibits a material palette that is considered robust and generally neutral. The podium and tower elements of the development attempt to respond to the built scale and form within the locality. Notwithstanding the proposed height the overall architectural expression, level of articulation, range of external materials and built form, is considered suitable for the Urban Corridor Zone.

The ground floor of the proposed development presents a continuous row of narrow fronted commercial/retail tenancies along Unley Road and down Hart Avenue, consistent with the High Street Policy Area. The proposed development provides canopies over the footpaths and should provide a comfortable and appealing pedestrian environment.

The proposal generally achieved appropriate performance outcomes in respect to technical matters such as pedestrian and vehicle access, bicycle parking, energy efficiency, waste management and stormwater management. The residential apartments generally exceed the minimum apartment size and the shortfall in private open space has been justifiably offset by the communal open space supplied. The proposed development generally offers appropriate apartment amenity.

Notwithstanding the height and minor shortfalls of the development, the proposal generally satisfies the policy provisions of the High Street (Unley Road) Policy Area and relevant development control policies. Council are of the opinion that the nature of the large scale mixed use development generally accords with the Urban Corridor Zone intent. It is consequently considered that the proposed development is not at significant variance with the Development Plan and warrants Development Plan Consent subject to conditions.

## ASSESSMENT REPORT

## 1. BACKGROUND

### 1.1 Strategic Context

In October 2013, the Stage 3A Main Corridors and Mixed use and Residential Vitalisation (Greenhill and Unley Roads) DPA was gazetted, which allows for medium density residential living above mixed use development

This rezoning included the introduction of the *Urban Corridor Zone* within the City of Unley to be rolled out over two of the City's major corridors in Greenhill Road and Unley Road. The policies were introduced to encourage a new form of urban living that enables more people to enjoy the benefits of an inner city lifestyle.

Policies encourage mixed-use forms of development complemented by well-designed and contemporary housing close to public transport, jobs and vibrant places. Two policy areas were introduced, including the High Street (Unley Road) Policy Area applicable to this site.

The DPA also included the introduction of the Air and Noise Emission Overlay that enables applicants to move noise assessment to the building stage of the approval process. This Overlay also contains planning policies to protect sensitive development from noise and air emissions generated from major transport corridors and mixed land use. The designated noise source in this case is Unley Road.

### 1.2 Pre-Lodgement Process and Background

The applicant did not participate in the pre-lodgement process. It is noted the Development Assessment Commission previously granted Development Plan Consent for (DA 090/M003/15) a 7 storey mixed use building comprising of retail, 140 apartment and ten (10) two storey townhouses. The previous application was approved across a larger amalgamation of sites between Hart and Opey Avenue.

## 2. DESCRIPTION OF PROPOSAL

The proposal consists of the construction of a 7 storey mixed use development comprising commercial/retail tenancies, residential apartments, ancillary car parking, landscaping and associated site works. Application details are contained in the **ATTACHMENTS.**

A summary of the proposal is as follows:

| | |
|---|---|
| **Land Use Description** | Mixed use development containing commercial/retail, residential apartments and associated car parking |
| **Building Height** | 7 Storey / 24.5 metres to the roofline |
| **Description of levels** | **Basement Levels:** Building services, storage, bicycle racks and car parks<br>**Ground Floor:** Five commercial tenancies, residential apartment foyer, building services, waste services, bicycle parking and car parking<br>**Level 1 – 6:** A total of 59 residential apartments consist of 10 one bedroom, 45 two bedroom apartment and 4 three bedroom apartments |
| **Apartment floor area (excluding balconies)** | **Dwelling Type** / **Floor Area (excluding POS)**<br>1 Bedroom apartments / 60 square metres<br>2 Bedroom apartments / 73-98 square metres<br>3 bedroom apartments / 152-155 square metres |
| **Site Access** | Vehicle parking is accessed via Hart Avenue located to the north of the development site. Pedestrian and Bicycle parking can be gained from Unley Road and Hart Avenue |
| **Car and Bicycle Parking** | Vehicle and bicycle parking is contained wholly in the proposed development and is not visible from the primary street frontage |
| **Encroachments** | There are encroachments in the form of canopies over Unley Road and Hart Avenue |

## 3. SITE AND LOCALITY

### 3.1 Site Description

The subject site is located at 244 – 246 Unley Road, Unley. The subject site consist of four allotments located on the western side of Unley Road. Hart Avenue is located to the immediate north of the subject site. The allotment is regular in shape and has a 42 metre frontage to Unley Road, a 59.2 metre frontage to Hart Avenue and a total site area of approximately 2,494m$^2$.

On the allotment fronting Hart Avenue is a single storey detached dwelling and associated outbuilding. The site has a free and unrestricted right of way over the laneway to the east. The three allotments fronting Unley Road contain commercial tenancies which has a floor area of approximately 1500m$^2$. Businesses currently operating from these sites include F45 Training Unley, Plaster Fun House and Connekt Plumbing. Access to these commercial tenancies is obtained via a single crossover off Hart Avenue.

| Lot No | Section | Street | Suburb | Hundred | Title |
|---|---|---|---|---|---|
| A1 | D1221 | Unley | Unley | Adelaide | CT 5380/232 |
| A2 | D1221 | Unley | Unley | Adelaide | CT 6067/119 |
| A3 | D1221 | Unley | Unley | Adelaide | CT 6134/955 |
| A4 | D1221 | Hart Ave | Unley | Adelaide | CT 5380/234 |

The figure below illustrates the subject land highlighted in blue in the context of the immediate locality.

**Figure 1 - Location Map**
The subject site gains vehicle access via Hart Avenue located to the immediate north

**Figure 2: Site Photographs**

Unley Road – looking west to subject land

Unley Road – looking north

Unley Road – looking south

Unley Road - looking east

Hart Avenue – looking west

Hart Avenue – looking east to Unley Road

Unley Road – looking southwest at subject site

Unley Road – looking northwest at subject site

### 3.2 Locality

The locality is characterised by a mixture of land-uses, which range from commercial, retail and residential uses. The site is bound by Unley Road to the east and Hart Avenue to the North. Unley Road is a two way arterial road which supports two lanes of vehicle traffic and a bicycle lane in both directions. Hart Avenue is approximately 8.8m wide and supports one lane of vehicle traffic in both directions

Unley Road is generally characterised by narrow frontage commercial buildings with majority of the buildings exhibiting little to no setback to the Unley Road. Many of these buildings are single storey and some of which are heritage listed. The Local Heritage listed Soldiers Memorial Garden is located approximately 100 metres north of the subject site and the State and Local Heritage listed Unley Town Hall and Church are located a further 100 metres north. The built form in Hart Avenue is generally low scale character fronted residential dwellings.

## 4. COUNCIL COMMENTS

### 4.1 City of Unley Council

Advice was sought from Council administration regarding technical matters. The following points were raised for consideration:

- Building height (and setbacks);
- Overlooking minimisation;
- Podium façade detailing and extent of footpath canopies
- On-site parking provision, allocation, design and dimensions;
- Site landscaping and lack of medium to large trees and roof-top gardens;
- Hart Avenue traffic and on-street parking management;

- Hart Avenue public realm implications including road configuration, lack of room for outdoor dining, loss of on-street parking, street trees pruning and planting
- Waste and service vehicle limitations
- Survey plan to confirm dimensions of site, buildings, Unley Road and Hart Avenue.

Council highlighted that it is the authority to negotiate appropriate outcomes in regard to street trees, future public realm upgrades, canopy encroachments and outdoor dining arrangements should the application be approved.

The applicant responded to Council comments and provided amended plans that consolidated the vehicle crossovers on Hart Avenue into one. Additionally the transformer was moved from the Unley Road frontage to Hart Avenue and an additional commercial tenancy was provided along Hart Avenue. It was also noted on the amended plans that the proposed public realm treatment and seating on the Hart Avenue was not part of the application.

Council provided revised comments, however still remained concerned with a number of aspects of the development including the height proposed. The Council did however supply eight planning conditions for SCAP's consideration should the application be supported. Council's referral response is contained in the **ATTACHMENTS** and are further discussed in the Planning Assessment.

## 5. STATUTORY REFERRAL BODY COMMENTS

### 5.1 Commissioner of Highways [Department of Planning, Transport and Infrastructure (Traffic Operations)]

The Commissioner of Highways is a mandatory referral in accordance with Schedule 8 of the Development Regulation 2008. The Panel must have regard to this advice. A general support of the type of development proposed was expressed however, the following points were raised for consideration:

- All development being setback a minimum of 2.13 metres from the Unley Road property boundary and being kept clear of the 4.5 x 4.5 metres corner cut-off at the Unley Road / Hart Avenue junction.
- Access to Hart Avenue being consolidated to a single point located as far from the Unley Road / Hart Avenue junction as practicable.
- Provision of a vehicle link between Opey Avenue and Hart Avenue for all vehicles associated with the development in order to enable better traffic distribution to these two streets and their junction.

The applicant reviewed and responded to DPTI's comments and provided amended plans. DPTI's statutory referral response is contained in the **ATTACHMENTS** and are further discussed in the Planning Assessment.

### 5.2 Government Architect

The Government Architect is a mandatory referral in accordance with Schedule 8 of the Development Regulation 2008. The Panel must have regard to this advice. The Associate Government Architect (AGA) responded to the referral by citing a number of perceived deficiencies and nominated the following elements which he believed would benefit from protection as part of any consent granted:

- Review of the building height
- Review of the built form composition along the Hart Avenue frontage
- Further information on site context to demonstrate the relationship between the proposal and the existing and future context
- Review of massing and three dimensional articulation strategy of the built form above the podium to reduce the apparent bulk

- Review of the presentation to Hart Avenue with the view to increase the extent of active use spaces
- Consideration of crossover consolidation
- Development of effective strategies to manage residential interface impacts, including overlooking
- Review of apartment entry sequence
- Review of the podium expression at the northeast and southeast corners
- Further information that demonstrates how the proposed vegetation in the central courtyard and atrium will be sustained and maintained
- Refinement of apartment layouts to eliminate inboard bedrooms
- Review of apartment typology to ensure all apartments have access to adequately sized private open spaces
- Relocation of air conditioning condensers from balconies
- Further information that demonstrates the environmental performance of the atrium and communal circulation spaces
- A high quality of external materials for building and landscaped areas supported by the provision of a materials sample board.

The applicant reviewed and responded to the comments of the Associate Government Architect and provided amended plans which were resubmitted to the AGA for further review. It was concluded that further design development and refinement are required to obtain the AGA's full support.

The AGA's statutory referral response is contained in the **ATTACHMENTS** and are further discussed in the Planning Assessment.

## 6. PUBLIC NOTIFICATION

The application is a Category 2 form of development. During the public notification period some nine (9) representations were received. It is noted, that of the nine (9) representations, four (4) were received from owners/occupiers of adjacent land pursuant to the definition within the Development Act 1993, as follows:

**adjacent land** in relation to other land, means land-
(a) That abuts on the other land; or
(b) That is no more than 60 metres from the other land and is directly separated from the other land only by-
(i) a road, street, footpath, railway or thoroughfare; or
(ii) a watercourse; or
(iii) a reserve or other similar open space

The representation prepared by Mr Philip Goodyear is in support for the proposed development however he opposed a component of the development. The remaining three (3) representations are in support of the proposal.

The follow matters were raised by Mr Philip Goodyear which generally relates to:

- Poor design quality at ground level
- Negative impact upon streetscape to Hart Avenue
- A lack of landscaping at ground floor on Unley Road
- Limited canopies on Unley Road
- Limited shelter for bus stop

The applicant provided a response to the matters raised by Philip Goodyear and the proposal has been amended as follows:

- Consolidation of the two crossovers on Hart Avenue
- Introduction of an active retail shop along Hart Avenue
- Provision of temporary landscaping adjacent to the future development site along Hart Avenue to minimise and screen the car parking area
- General increase in canopy width to 1.8m over the Unley Road and Hart Avenue footpaths.

All representations received during the public notification process, together with the applicant's response, are contained within the **Attachments.**

## 7. POLICY OVERVIEW

The subject site is within the High Street (Unley Road) Policy Area 20 of the Urban Corridor Zone as described within the Unley Council Development Plan Consolidated 30 May 2017.

Relevant planning policies are contained in the **ATTACHMENTS** and summarised below.

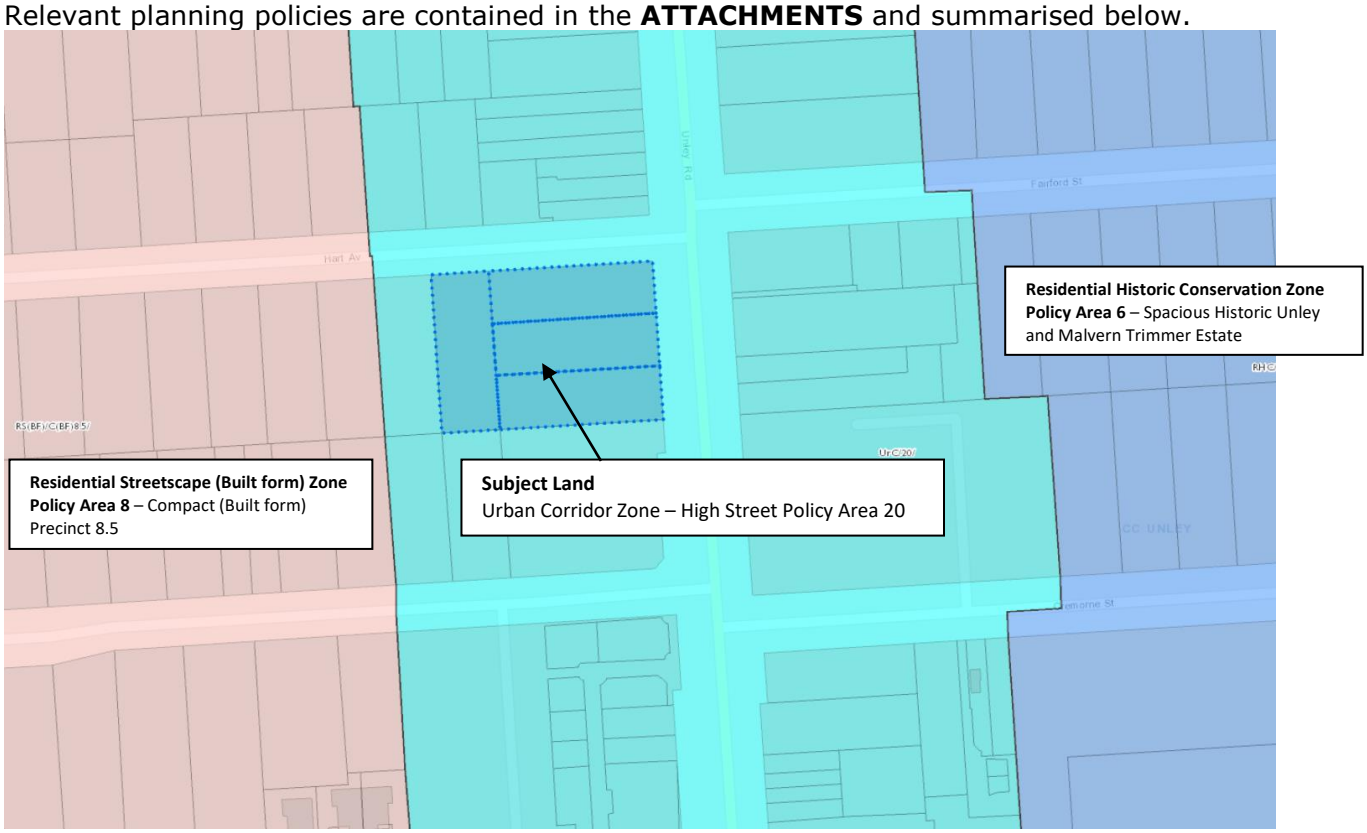



**Figure 3 - Zoning Map**

### 7.1 Policy Area

The High Street (Unley Road) Policy Area envisages moderate scaled buildings that are intended and should compromise of predominately small scale shops, mixed business services and hospitality at ground, with upper levels comprising of residential apartments.

### 7.2 Zone

The Urban Corridor Zone encourages a diverse range of land-uses, providing opportunity for compatible non-residential and medium and high density residential land uses orientated towards a high frequency public transport corridor; Unley Road in this instance.

Buildings of three or more storeys will be the predominant built form, with key strategic sites developed with landmark buildings that will feature prominent, attractive and activating road facades. At ground level the zone seeks a high level of pedestrian amenity for Unley Road, which provides integrated linkages to adjacent centres, public transport stops and spaces.

The Zone seeks overlooking, overshadowing and emission impacts to be moderated through good design and mitigating techniques. Impacts on adjoining zones will be minimised through appropriate land uses, building envelopes, transition of building

heights, design and location of on-site activities / windows / balconies and uses of landscaping.

Car parking to the rear of development is emphasized, with access and parking areas to be design to minimise impacts on adjoining residential areas. Water sensitive urban design (WSUD) for harvest, treatment, storage and reuse of stormwater, and environmentally sustainable design (ESD) for reduction in energy consumption is encouraged within the Zone

### 7.3 Council Wide

The Council Wide provisions detail a range of policy guidelines for consideration with respect to medium and high rise residential development in the City of Unley, and specifically the Urban Corridor Zone. These matters will be discussed in greater detail within the body of the assessment below.

### 7.4 Overlays

#### 7.4.1 Affordable Housing

The proposal is subject to the affordable housing overlay. The applicant noted that the proposed development does not contain any affordable housing.

#### 7.4.2 Noise and Air Emissions

This site is located within the designated area for the Noise and Air Emissions Overlay, and as such requires assessment against *Minister's Specification SA 78B for Construction Requirements for the Control of External Sound.*

## 8. PLANNING ASSESSMENT

The application has been assessed against the relevant provisions of the Unley Development Plan [Consolidated 4 July 2017], which are contained in **ATTACHMENTS**.

### 8.1 Quantitative Provisions

| | Development Plan Guideline | Proposed | Guideline Achieved | Comment |
|---|---|---|---|---|
| **Building Height** | Zone PDC 12 Prescribes a maximum height of 5 Storeys (up to 18.5 metres) | 7 Storeys (24.5 metres) | YES ☐<br>NO ☒<br>PARTIAL ☐ | |
| **Land Use** | Zone and Policy Area envisages compatible mixed use developments | Mixed use retail/commercial and residential building | YES ☒<br>NO ☐<br>PARTIAL ☐ | |
| **Car Parking** | **Required**<br>21 carparks (commercial)<br><br>66 carparks residential plus 15 visitors<br><br>Requirement of 102 carparks | 79 carparks proposed, shortfall of 23 carparks | YES ☐<br>NO ☒<br>PARTIAL ☐ | Shortfall in car parking – discussed in assessment |
| **Bicycle Parking** | **Required**<br>8 non-residential bicycle spaces<br><br>40 residential bicycle spaces | 36 bicycle parks proposed, shortfall of 12 bicycle parks | YES ☐<br>NO ☒<br>PARTIAL ☐ | Shortfall in bicycle parking discussed assessment |

| | | | | |
|---|---|---|---|---|
| | (including visitors) | | | |
| **Front Setback** | Policy area does not seek a front setback | No front setback has been proposed | YES ☒<br>NO ☐<br>PARTIAL ☐ | |
| **Rear Setback** | 3 Metres | Development has been setback 15m from rear boundary | YES ☒<br>NO ☐<br>PARTIAL ☐ | |
| **Side Setback** | 0m up to 20m from primary road junction and 2m thereafter (Hart Avenue)<br><br>0m for south boundary | Development not setback from southern boundary or Hart Avenue | YES ☐<br>NO ☐<br>PARTIAL ☒ | Discussed further in the assessment |
| **Apartments Size** | 1B/R – 50m$^2$<br>2B/R – 65m$^2$<br>3B/R – 80m$^2$<br>**(Adelaide City Council guideline)** | **Proposed**<br>1B/R – 60-86m$^2$<br>2B/R – 73-98m$^2$<br>3B/R – 152-155m$^2$ | YES ☒<br>NO ☐<br>PARTIAL ☐ | |
| **Private Open Space** | 20m$^2$ for dwellings in non-residential zone | **Proposed**<br>1B/R – 8-39m$^2$<br>2B/R – 12-24m$^2$<br>3B/R – 48-70m$^2$ | YES ☐<br>NO ☐<br>PARTIAL ☒ | Discussed further in the assessment |

### 8.2 Land Use and Character

The Urban Corridor Zone envisages integrated mixed use developments is the form of medium and high rise building with ground floor uses that create active and vibrant streets with residential development above. The High Street (Unley Road) Policy Area seeks buildings to be sited and provide a continuous and consistent built edge with verandas/awnings over the public footpath. There is a strong focus in the Policy Area to create an intimate public realm with active street frontages.

The proposal involves the development of a mixed use building with commercial/retail tenancies on ground and residential apartments above. The proposed land-use and composition of the development is consistent with the Urban Corridor Zone and High Street (Unley Road) Policy Area.

### 8.3 Building Height and Interface

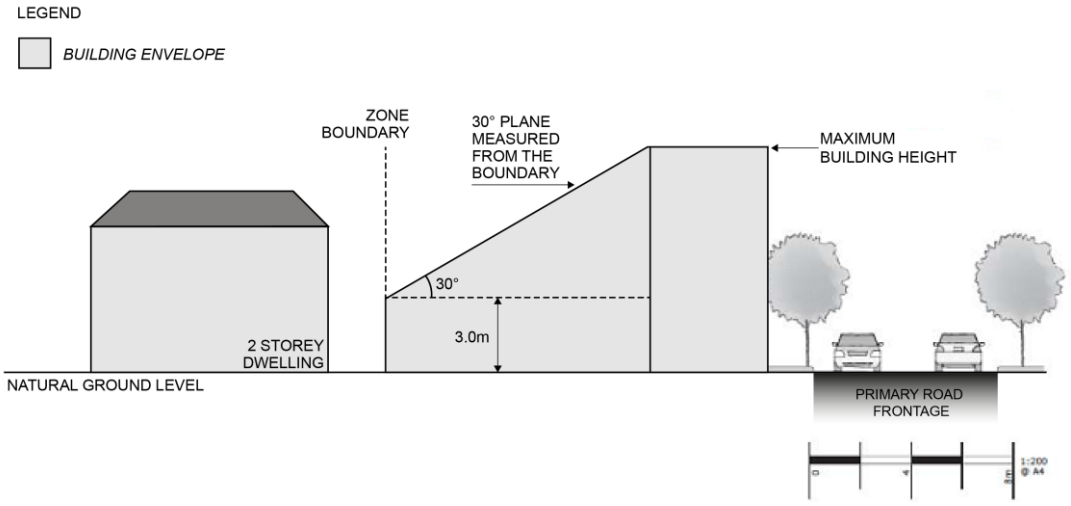
The Urban Corridor Zone - High Street (Unley Road) Policy Area envisages the following building height and interface provisions:

| Policy area | Minimum building height | Maximum building height |
|---|---|---|
| Boulevard (Greenhill Road) Policy Area 19 | 3 storeys (11.5 metres), or 4 storeys (15 metres) for land that is directly adjacent to or facing the Adelaide Park Lands. | 7 storeys and up to 25.5 metres |
| High Street (Unley Road) Policy Area 20 | 3 storeys (11.5 metres) | 5 storeys and up to 18.5 metres |
| Transit Living (Anzac Highway) Policy Area 24 | 3 storeys or no less than 11.5 metres for sites fronting Anzac Highway, and 2 storeys or no less than 8 metres for sites fronting Leader Street or Maple Avenue | 6 storeys and up to 22 metres. |
| Business (Leader Street and Maple Avenue) Policy Area 25 | 2 storeys or no less than 8 metres | 6 storeys and up to 22 metres. |

**Interface Height Provisions**

**PDC 13** To minimise building massing at the interface with development outside of the zone, buildings should be constructed within a building envelope provided by a 30 degree plane, measured from a height of 3 metres above natural ground level at the zone boundary (except where this boundary is a primary road frontage, as illustrated in Figure 1).

**Figure 1**




The overall building height is 7 storeys (including ground) or approximately 24.5 metres to the roofline excluding roof details, which exceeds the maximum five storey limit. However there are several aspects of the proposed development that provide support for the proposed height, which are:

- The design and appearance of the proposed development attempts to reduce the scale and bulk of the building through the use of a two storey podium form, which references the existing lower scale built form in the locality.
- The substantive bulk of the building when viewed from Unley Road could be defined by the 5 level (which presents as a datum line) as a response to the

zone policies. The projected datum line is strengthened by the setback of the top apartment floor

- The top apartment floor is setback 5.3 metres from Unley Road and clad with dark coloured metal cladding to reduce the visual impact which is supported by the AGA.
- Vertical green screens included on all facades, should visually soften the mass and scale of the development.
- The development has been sited to ensure maximum separation distances from the adjoining residential dwelling and the Residential Streetscape (Built Form) Zone to the west.
- The subject site does not adjoin the Residential Streetscape (Built Form) Zone and it is noted that the proposed built form is within the 30 degree envelope plane, consistent with Urban Corridor Zone PDC 13.

It is acknowledged that the AGA does not support the height. The AGA is of the opinion that the architectural expression does not manage the physical and visual impacts of the scale and bulk of the proposal.

The proposed development exhibits the intent to reduce the scale and bulk through the use of a podium/tower element, materials, setbacks and separation distances. Whist the proposed development exceeds the maximum envisaged height of the Policy Area it is not considered fatal to the application.

**8.4 Setbacks**

The Development Plan provides the following setback guidelines for the subject site:

- Unley Road – 0 metres
- Hart Avenue – 0 metres for a distance of 20 metres from the primary road junction and 2 metres thereafter
- Southern Boundary 0 metres
- Western Boundary – 3 metres

The proposed development generally satisfies the required setbacks as prescribed in the High Street (Unley Road) Policy Area. It is noted that the secondary frontage to Hart Avenue is not setback 2 metres after a distance of 20 metres from Unley Road intersection. It is assumed that the intent of the transitional setback of 2 metres is to gradually acknowledge the adjoining residential zone to the west, which can be characterised by larger front setbacks.

Whist the proposed development does not provide a 2 metre setback, it is acknowledged that the development site does not adjoin the residential zone. It is also noted that the built form is 15 metres from the closest dwelling to the west and in excess of 30 metres from the closest dwelling in the Residential Streetscape (Built Form) Zone.

The lack of setback from Hart Avenue is not ideal, however the separation distances to the dwellings and residential zone should provide adequate transition in scale and setback. On balance it is considered that the development is unlikely to detrimentally impact the immediate locality within Hart Avenue and the adjoining residential zone.

**8.5 Design and Appearance**

The Desired Character Statement of the Urban Corridor Zone provides the following guidance with respect to the built form of the building

> *High Street Policy Area – where more moderate scaled buildings of mixed use are intended along Unley Road with predominantly small scale shops, mixed business services and hospitality uses at ground and low building levels and upper level comprising residential apartments.*

Council-wide policy broadly seeks developments of a high architectural standard that complements the existing buildings and locality. Developments are encouraged to minimise visual bulk of the building, whilst achieving human scale at ground level. Balconies should be incorporated into the architectural expression of the building.

The proposed development is contemporary in nature and exhibits material palette that is robust and generally neutral. The podium and tower elements of the development attempts to responds to the built scale and form within the locality as well as the desired character of the Urban Corridor Zone. The AGA supports the two storey podium which references the height of the former National Bank building. The proposed masonry used in the podium responds to the fine grain materials in the locality and is supported by the AGA.

The tower element is setback from all sides, which helps define the built form and is further strengthened by the change in materials. The architectural expression of the tower element is articulated by framed balconies in a contrasting colour and layers of concrete slab edges which provides a sense of depth to the facades. Vertical 'green' screens have been provided on all sides to help soften the mass and visual bulk of the development. The AGA is of the opinion that the bold framing of the balconies over the multiple levels does not assist in achieving a recessive built form above the podium as intended.

The ground floor of the proposed development presents a continuous row of narrow fronted commercial/retail tenancies along Unley Road and down Hart Avenue, consistent with the High Street Policy Area which seeks activation at ground through the use of small scaled shops. This activation at ground is strengthened with canopies over the footpaths of Unley Road and Hart Avenue, consistent with PDC 4 (Medium and High Rise Development). The building services have been located and strategically incorporated into the podium form which is supported by the AGA. The commercial/retail tenancy along Hart Avenue sleeves the ground level car parking area and is generally considered a good design outcome and also supported by the AGA. It is acknowledged that the applicant intends to develop the Hart Avenue footpath by incorporating alfresco dining opportunities. The development of the public realm along Hart Avenue is supported, however it is noted that these works are outside of the development site and are not part of this application.

The overall architectural expression, level of articulation, range of external materials and overall form is considered suitable for the Urban Corridor Zone. The design of the building should provide a comfortable and appealing pedestrian environment that is sheltered by canopies. On balance the design and appearance of the proposed development is considered appropriate and should positively contribute to the streetscape.

### 8.6 Apartment Amenity

The Development Plan seeks medium to high scale residential development to provide a high standard of apartment amenity with functional internal layouts. All residential developments should have direct access to natural light and ventilation.

The proposed development consists of 30 one bedroom, 25 two bedroom and 4 three bedroom apartments and is considered consistent with PDC 16 Medium and High Rise Development which seeks development comprising of 10 or more dwellings to provide a variety of dwelling sizes and configures. The main entrance and lobby area for the residential apartments is located centrally and can be accessed via Unley Road or the undercover carpark and is supported by the AGA.

PDC 15 Medium and High Rise Development seeks living rooms to have a satisfactory short range visual outlook to public, communal or private open space. All apartment living rooms within the proposed development have direct and unrestricted views to private open space. All apartments have windows with natural light and ventilation

into all habitable rooms and bedrooms. Apartment type 3 and 4 have internal rooms that receive access to light and ventilation via a high level window to the internal atrium. The applicant noted that these internal rooms are multi-purpose that which can be used for a variety of functions, further enhancing the adaptability of apartment.

Air-conditioning condenser units on the balcony are generally not supported due to the potential adverse impacts on the apartment amenity and the street. In this instance the applicant has provided a screening strategy to ensure the air-conditioning units are less visible from the street, however it is noted the air-conditioning units will still impact the usable balcony space and amenity of the apartment.

The Development Plan is silent on minimum apartment sizes, however when reviewed against the relevant provisions outlined in the Adelaide City Council Development Plan, all the apartments exceed the minimum requirements. The setback of the upper levels generally demonstrate appropriate separation from current and future developments.

The proposal provides an extensive landscaped communal courtyard area on level one, with a 5 level atrium above. The atrium is proposed with a translucent roof and operable louvers at the top to allow for light and ventilation. The atrium will be greened through balcony edge planting and vertical trellis climbers. The applicant has highlighted that the communal area has been designed for shared use. The communal area will provide a space for individuals and small group gatherings and could provide an extension of the residents' back yard. The communal open space and associated landscaping are considered a positive feature to the residential apartment amenity. The AGA supports the landscaping on balance, however it is contingent on the resolution and full delivery of all the landscape concepts within the courtyard and atrium spaces.

On balance the generous apartment sizes, communal open space coupled with functional adaptable layouts provides the proposed development with appropriate apartment amenity and is generally considered consistent with the Development Plan.

### 8.7 Private Open Space

Residential PDC 20 seeks 20 square metres of private open space to be provided to each dwelling under 300 square metres in floor area, within a non-residential zone. While Residential Development PDC 22 seeks balcony areas to be a minimum dimension of 2 metres, be screened to 1.7 metres high and have at least 70 percent of the area uncovered.

All private open space areas within the development are directly accessible from a living rooms and satisfy the minimum dimension of 2 metres with a significant number having northerly orientations. It is noted that screening devices are absent from most of the balconies, however due to the orientation and separation to the Residential Zone is generally considered acceptable and should not result in a detrimental impact to the lower scale residential dwellings to the west.

Apartment types 2, 5 and 6 do not meet the minimum private open space requirements set out in the Development Plan. It is noted that whilst the apartments present a shortfall in private open space, there is a communal space on level 1 that is considered appropriate to offset these shortfalls. Furthermore the location of the apartments within the Urban Corridor coupled with the generous apartment sizes could further offset the shortfalls in private open space.

On balance the balconies are generally of sufficient size and depth to accommodate outdoor seating and the shortfall in private open space is not considered fatal to the apartment amenity.

## 8.8 Traffic Impact, Access and Parking

### 8.8.1 Car parking

Table Un/5 provides Off Street Vehicle Parking Requirements
These requirements state

| Location of development | Desired minimum number of vehicle parking spaces | Maximum number of vehicle parking spaces |
|---|---|---|
| All Designated Areas (unless otherwise stated) | 3 spaces per 100 square metres of gross leasable floor area | 6 spaces per 100 square metres of gross leasable floor area |
| Urban Corridor Zone | 3 spaces per 100 square metres of gross leasable floor area | 5 spaces per 100 square metres of gross leasable floor area |

| Kind of Development | In Non-residential Zones and mixed use development |
|---|---|
| Small (1bedroom or floor area <75m$^2$) | 0.75 |
| Medium (2 bedroom or floor area <150m$^2$ | 1.25 |
| Large (3 or more bedrooms or floor area >150m$^2$ | 1.75 |
| Additional visitor carparking | 0.25 |

The Development Plan does not depict a residential parking rate for development in the Urban Corridor, as such the residential car parking rates recommended for mixed use development located in non-residenital zones were used to calculated the require residential car parks.

Based on the proposed 692m$^2$ of gross leaseable floor areas the development will require a minimum of approximately 21 carparking spaces for the commercial/retail tenancies. A total of 66 residential carparking spaces are required in addition to the 15 car parking spaces for residential visitors.

Council in principle supported the provision of 85 carparks orignially proposed, the amended plans reduced the number of carparks to 78. Council are of the opinion any on-site shortfall is significant and compounds the problems with inadequate and major loss of potential on-street parking.

The proposed development has 60 residential car parking spaces in the basement levels and 18 carparks at ground level presenting a shortfall of approximately 24 carparks. However it is noted in Transport PDC 29, the policy comtemplates a lesser number of parking spaces in mixed use buildings where the operating hours of commerical activities complement residential use of the site, which would be applicable in this instance.

It is also noted that the development site is located in close proximity to high frequency bus services, walking and bicycle paths. Whilst the proposed developmet presents a shortfall in carparking, there is a potential for shared parking between the land uses which could offset this shortfall and should not result in a detrimental impact to the proposed development or the immediate locality.

### 8.8.2 Bicycle Parking

Table Un/6 provides bicycle parking requirements for the whole Council.
These requirements state:

| Form of development | Employee/resident (bicycle parking spaces) | Visitor/shopper (bicycle parking spaces |
|---|---|---|
| Residential component of multi-storey building/residential flat building | 1 for every 2 dwellings | 1 for every 6 dwellings |
| Office | 1 for every 150 square metres of gross leasable floor area | 2 plus 1 per 500 square metres of gross leasable area |
| Shop | 1 for every 300 square metres of gross leasable floor area | 1 for every 600 square metres of gross leasable floor area |
| Tourist accommodation | 1 for every 20 employees | 2 for the first 40 rooms plus 1 for every additional 40 rooms |
| Other non-residential development | 1 for every 150 square metres of gross leasable floor area | 2 plus 1 per 500 square metres of gross leasable floor area |

As per the relevant Development Plan requirements the following bicycle spaces will be necessary:

- 30 bicycle parking spaces for the residential apartments
- 10 bicycle parking spaces for visitors of the apartments
- 6 bicycle spaces for office (3 spaces for employees and 3 for customers)
- 2 bicycle space for retail (1 space for employee and 1 for customer)

Assuming an approximately 50:50 split between office and retail uses of the tenancies, the proposal needs to provide a total of 8 non-residential bicycle spaces and 40 residential bicycle spaces (including visitors). The proposed development has 36 bicycle parks which presents a shortfall of approximately 12 bicycle parks.

It is noted in the Development Plan that in residential and mixed-use development, the provision of bicycle parking may be reduced in number where the operating hours of commercial activities complement the residential use of the site. As such the shortfall of 12 bicycle parks is not considered to be fatal in this instance. Council were of the opinion that the bicycle parking provided coupled with each apartment's storage area should generally exceed the policy requirements.

It is noted that all the bicycle parks are undercover and are located where some surveillance is possible. The residential bicycles parking spaces located in the basement can be readily accessed via ramp and the security roller door which should ensure the residential bicycles are secure during afterhours.

The proposal is considered on balance to satisfy the Development Plan requirements for bicycle parking.

### 8.8.3 Traffic

The Urban Corridor Zone generally seeks developments to minimise the number of access point on an arterial road and where possible be from local streets including rear lane access. Additionally the access points from the side streets should be located and designed to minimise the impacts of headlight glare and noise on nearby residents.

The proposed development was referred to the Commissioner of Highways (DPTI) for comments. DPTI were generally supportive of the proposed development but requested that a setback of 2.13 metres from the Unley Road

property boundary is provided for potential UnleyLink tram extension. Aswell as a 4.5 metres x 4.5 metres corner cut off at the Unley Road/Hart Avenue junction. Additionally DPTI suggested that the access to Hart Avenue should be consolidated to a single point and located as far from the Unley Road/Hart Avenue junction as practical. DPTI also encouraged the provision of a vehicle link between Opey Avenue and Hart Avenue to enable better traffic distribution.

There are several buildings within the locality along Unley Road (including State & Local Heritage), that align with the Unley Road Boundary. Whilst a setback of 2.13m would be ideal for the potential UnleyLink, it is not considered fatal to the application.

The applicant responded highlighting that the transparent nature of the north-eastern edge of the built form should allow sightlines through the building avoiding the need for a corner cut-off. It was also noted that a vehicular link has been provided from Hart Avenue which provides the opportunity for the adjacent owner to integrate access to establish the link through to Opey Avenue. Amended plans were provided which consolidated the two access points off Hart Avenue to the western end of the site. It is also noted there is the provision of landscaping and fencing adjacent to the development site and along Hart Avenue, reducing views into the carpark as well as further mitigating headlight glare on the adjoining residents.

Phil Weaver and Associates were engaged to conduct a traffic and parking assessment. The report summarised that the proposed development will result in only minor increases in traffic flows on the road network and should not result in any significant change to the operation of the Unley Road / Hart Avenue intersection. It was also highlighted in the report that the proposed car parking area has been appropriately designed in accordance with relevant off-street parking standards and will include appropriate levels of car parking for use by the disabled. Council were of the general opinion that the traffic increase will be noticeable but it is envisaged to have a minor impact on traffic performance and efficiency.

Overall the access arrangements for the site and resulting minor increase in vehicle traffic in the locality is considered consistent with the land-use and Urban Corridor Zone.

## 8.9 Environmental Factors

### 8.9.1 Crime Prevention

The Development Plan generally seeks development to integrate and maintain sight lines between building and streets to improve safety and passive surveillance. Building should be orientated to overlook public and communal open spaces and streets to allow casual surveillance.

The proposed development is orientated regularly within the development site promoting passive surveillance from ground level and upper level balconies onto the public realm (Unley Road and Hart Avenue). The commercial tenancies on ground level utilise extensive glazing to ensure visibility to and from the street. The applicant has confirmed that entrance to the residential levels will be controlled with a key card or remote control and visitor access will be controlled by residents via an intercom system.

These measures are considered to address the principles of personal safety and provided sufficient levels of passive surveillance to the public and private realms of the development.

### 8.9.2 Noise Emissions

Council Wide Development Plan Policies seeks developments with noise generating sources to be located, and attenuated to avoid adverse impacts on existing and potential future land uses in the immediate locality. Additionally residential development close to high noise sources should be designed with appropriate noise attenuation measures to mitigate any negative impacts on residential amenity.

The site is also located in a 'Designated Area' and adjacent to a 'Designated Road: Type B Road' in the Noise and Air Emissions overlay in the Development Plan.

Resonate Acoustics were engaged by the applicant to prepare an Acoustic Design Advice Report for the proposed development. The consultant's acoustic report acknowledged that the main acoustic issues will relate to the façade constructions to control mixed use noise sources, road noise and mitigation treatments to control noise emissions from external plant.

The report recommends noise mitigation treatments to the residential apartments in the form of specified glazing and materials that should attenuate noise intrusion from traffic on Unley Road in accordance with the *Minister's Specification SA 78B.* It was acknowledged in the report that detailed information on the air-conditioning and mechanical services is not available.

The applicant has agreed to the inclusion of the specified acoustic attenuation recommendations and indicated that appropriate noise attenuation enclosures for mechanical services and plants will be finalised during the detailed design phase.

The recommendations contained within the Resonate Acoustics report is proposed to be dealt with as a condition of consent. It is anticipated noise impacts are considered acceptable subject to adherence to the Resonated Acoustics recommendation.

### 8.9.3 Waste Management

The Development Plan encourages medium and high rise development to provide a dedicated area for on-site collection and sorting of recyclable materials, that is appropriately screened and should not detract from the visual appearance of the ground floor.

The proposed development utilises a waste chute system for the residential component, which is to be managed and maintained by building services. Commercial tenants on ground will be responsible for manually transporting their waste directly to the appropriate bins in the waste storage room. The waste storage rooms are not directly visible from Hart Avenue or Unley Road consistent with the Development Plan requirements.

The proposed development includes a waste storage room and chute room large enough to accommodate 4x1100 litre general waste bins, 4x660 litre organic waste bins, 2 x660 litre cardboard waste bins and 2x1100 litre co-mingled recycling. The applicant noted that whilst the waste room can accommodate separate organic waste bins, the waste arrangements will be reassessed once the building is functioning to determine if organic waste stream is required. A bin wash area has been included in the waste collection room.

The collection vehicles expected for waste collection at the proposed development will consist of rear lift trucks for collection of routine waste, Pan tech or flatbed trucks for collection of at call waste streams. The consultant's

report estimated that there would be approximately 13 waste collection vehicles per week at the site.

A commercial waste contractor will be responsible for the collection of waste from the development. Waste collection is proposed to occur on-site in the Private Lane, which is owned by the site. It is noted that the waste truck would need to reverse into the Private Lane from Hart Avenue and will leave in a forward direction.

On balance the proposed waste management is acceptable and generally consistent with the Development Plan.

**8.9.4 Energy Efficiency**

The Desired Character Statement for the Urban Corridor states:

> *Water sensitive urban design (WSUD) for the harvest, treatment, storage and reuse of stormwater, and environmentally sustainable design (ESD) for reduction in energy consumption through passive design, construction and operation is envisaged with development. Green (vegetated) places will assist urban heat island effects and roof top gardens will provide opportunities for private and communal open space*

D2 were engaged by the applicant to conduct an ESD Report on the proposed development. The report outlined that the proposed dwellings are designed to achieve a 7 Star average National Housing Energy Rating (NatHers), which is achieved through a combination of passive design (cross ventilation and daylight control) and good quality design.

All apartments within the proposed development have access to natural ventilation and light, reducing the reliance on mechanical cooling, heating and lighting. Double glazing will be utilised within the building to further increase the energy efficiency. Energy efficient LED light fittings with automated lighting control systems will be utilised in common areas.

Stormwater will be captured in two storage tanks at ground level and will be reused for landscape irrigation. Photovoltaic solar panels are proposed to be installed on the roof and will provide power to common areas. The communal area and extensive landscaping on level one should assist in reducing the urban heat island effect.

The proposed development demonstrates appropriate energy efficiency consideration and generally satisfies the Zones Desired Character Statement.

**8.9.5 Wind Analysis**

*Development Plan PDC 22 (Medium and High Rise Development) seeks development of 5 or more storeys, or 21 metres or more in building height (excluding the rooftop location of mechanical plant and equipment), should be designed to minimise the risk of wind tunnelling effects on adjacent streets by adopting one or more of the following:*

> *(a) a podium at the base of a tall tower and aligned with the street to deflect wind away from the street;*
> *(b) substantial verandas around a building to deflect downward travelling wind flows over pedestrian areas;*
> *(c) the placement of buildings and use of setbacks to deflect the wind at ground level.*

The proposed development utilises 1.4-1.8 metre canopies at ground level that provides weather protection to the Unley Road and Hart Avenue footpath. The

canopies should also deflect and mitigate downward traveling wind onto the public realm. The podium at the base of the development along with articulation of the tower element should further mitigate the potential for wind tunnelling.

The proposed development demonstrates appropriate measures to reduce the potential for wind tunnelling at lower pedestrian levels and is considered consistent with PDC 22.

### 8.9.6 Landscaping

The Urban Corridor encourages developments to provide well designed landscaping to visually soften large building facades, screen and buffer parking/ services and provide amenity. This should be in the form of plants with a mature height, scale and form to complement and relate to the development

The applicant has engaged Hassel to provide an extensive landscaping concept for the proposed development. The proposed landscaping seeks to link the existing street tree canopies through the use of facade greening to the podium mass. The proposed landscaping also utilises vertical green screens on the tower facade to assist with softening the building mass and presence within the streetscape. The atrium and communal space on level 1 provides an extensive landscaped shared area of high amenity for the building occupants. It is noted that the development intends on harvesting stormwater and reusing it as irrigation for the landscaping which is a positive outcome.

The AGA's supports for the proposed landscaping is contingent on the resolution and delivery of all the landscape concepts within the proposed development. Overall, the proposed landscaping treatment for the proposed development is considered appropriate and should assist in visually softens the hard surfaces of the external built form.

### 8.9.7 Stormwater

The Development Plan policies generally seeks stormwater management systems to be designed and located to improve the quality of stormwater, minimise pollutant transfer to receiving waters. Additionally developments are encouraged to incorporate on-site detention and retention facilities.

The applicant engaged Structural Systems Pty Ltd to prepare a stormwater management report for the proposed development. The consultant's report concluded that the proposed development will result in a minor increase in impervious and peak flow rates. The proposed development includes above ground 22,000 litre retention tank to ensure post development discharges rates are mitigated. Water quality improvements systems have been installed to all grated sumps and the captured stormwater is to be used for irrigation consistent with the Development Plan.

Council noted that the 5 proposed stormwater outlets onto Unley Road and Hart Avenue could result in an undesirable flow and suggested that 8 outlets are provided. This has been proposed to be dealt with as a planning condition included in the recommendation of this report.

The proposed development demonstrates appropriate stormwater provisions and is generally considered consistent with the Development Plan.

### 8.9.8 Site Contamination

The development site is currently being used for commercial/retail uses as such it is considered that there would be a very low risk of contamination being present. As such it is unlikely there would be unacceptable health or environmental risk to future residents, visitors and tenants.

### 8.10 Overlooking and Overshadowing

It is noted within the Desired Character Statement from the Urban Corridor Zone

> *Overlooking, overshadowing and emission impacts will be moderated through good design and mitigation techniques, however, it is noted noise and air amenity cannot be expected to be equivalent to a purely residential area. Impacts on adjoining zones will be minimised through appropriate land uses, building envelopes, transition of building heights, design and location of on-site activities/windows/balconies, and use of landscaping.*

*Overlooking*

The proposed development has included a designated private laneway to the rear of the development which provides vehicle access as well as separation to the existing dwelling at 3 Hart Avenue. As a result the residential apartment balconies on level one are setback approximately 15.4 metres from the boundary. The upper levels and penthouse are setback further to increase separation from the lower density residential dwellings to the west.

It is noted that the development is separated from the adjoining Residential Streetscape (Built Form) Zone a minimum of 30 metres, which is generally consistent with Overlooking PDC 39 which seeks separation of 30 metre radius to private open space. It is also noted that direct views would be further reduced by the significant landscaping exhibited within the immediate locality.

On balance the development displays sufficient separation from the adjoining Residential Streetscape (Built Form) Zone and 3 Hart Avenue to the immediate west to minimise any potential overlooking impact.

*Overshadowing*

The Urban Corridor Zone recognises that some level of overshadowing will occur, which can be moderated through different design techniques. The Shadow Study prepared by Tectvs illustrates the potential overshadowing the proposed development could create during the winter and summer solstices.

During the winter solstice at 9AM the proposed development cast shadows over the dwellings at 3 Hart Avenue and 6 Opey Avenue, it is noted that by 12PM the shadows are predominately cast over the existing commercial buildings, carparks and Unley Road to the south east.

The extent of the overshadowing as a result of the proposed development is not considered unreasonable and is not considered to detrimentally impact the amenity of the surrounding residential dwellings.

## 9. CONCLUSION

The proposal is for the construction of a 7 storey mixed use development consisting of commercial/retail tenancies, residential apartments, ancillary car parking, landscaping and associated site works, which is considered to generally align with both the Urban Corridor Zone and more specifically the High Street (Unley Road) Policy Area.

The proposed development exceeds the maximum envisaged height of the High Street Policy Area, however, it is noted that the subject site is separated from the Residential Streetscape (Built Form) Zone to west by 30 metres. The architectural expression and articulation of the proposed development attempts to reduce the perceived visual bulk and scale of the building. The development has been sited and designed to reduce impacts upon the surrounding properties and locality. The built form is contained wholly within the 30 degree building envelope plane and is

considered to provide appropriate separation and transition to the Residential Zone to the west. The extent of the overshadowing as a result of the proposed development is not considered unreasonable and should not detrimentally impact the amenity of the surrounding residential dwellings.

The proposed development is considered to positively contribute to the desired character of the Urban Corridor Zone and is worthy of conditional Development Plan Consent on the basis of the following:

- building design incorporates a large number of energy efficiency initiatives with the aim to achieve a 7 Star average NatHer rating, which should result in positive energy and water usage savings
- the development positively contributes to the ground level activation whilst presenting narrow-fronted commercial tenancies consistent with the desired character of the High Street (Unley Road) Policy Area
- the development provides a high quality pedestrian experience through the use of a podium and human scale at ground level, glazed ground floor tenancies and canopies above the pedestrian footpath
- the development presents a range of apartment types in close proximity to public transport and amenities
- the proposed apartments have been configured to provide natural light and ventilation and are considered to provide a high level of adaptability and apartment amenity
- the extensively landscaped communal space is considered to provide a high level of residential amenity
- all car parking is located underground or to the rear of the site and is screened from the public realm, with an ability to link to the neighbouring property to the south as per the Development Plan requirements

When assessed against the relevant Development Plan policies the proposal is not considered to be significantly at variance with the policy provisions. The proposal is consistent with the desired character of the High Street Policy Area in the Urban Corridor Zone and is not considered to result in or cause unacceptable impacts on the local amenity. Accordingly, the proposal warrants Development Plan Consent subject to conditions.

## 10. RECOMMENDATION

It is recommended that the State Commission Assessment Panel:

1) RESOLVE that the proposed development is NOT seriously at variance with the policies in the Development Plan.

2) RESOLVE that the State Commission Assessment Panel is satisfied that the proposal generally accords with the related Objectives and Principles of Development Control of the Unley [City] Development Plan.

3) RESOLVE to grant Development Plan Consent to the proposal by Future Urban Group for DA 090/M008/17 at 244-246 Unley Road, Unley subject to the following conditions of consent.

## PLANNING CONDITIONS

1. That except where minor amendments may be required by other relevant Acts, or by conditions imposed by this application, the development shall be established in strict accordance with the details and following plans submitted in Development Application No 090/M008/17.

| Drawing Title | Drawing No. | Rev. | Date |
|---|---|---|---|
| Floor Plan | P01 | 1.0 | August 2017 |
| Floor Plan | P02 | 1.0 | August 2017 |
| Floor Plan | P03 | 1.0 | August 2017 |
| Floor Plan | P04 | 1.0 | August 2017 |
| Floor Plan | P05 | 1.0 | August 2017 |
| Floor Plan | P06 | 1.0 | August 2017 |
| Floor Plan | P07 | 1.0 | August 2017 |
| Section | P08 | 1.2 | December 2017 |
| Section | P09 | 1.2 | December 2017 |
| Elevations | P10 | 1.2 | December 2017 |
| Elevations | P11 | 1.0 | August 2017 |

**Reports / Correspondence**

- Planning Statement by Future Urban Group dated 2 August 2017
- 246 Unley Road Landscape Concept Design by Hassell dated 5 July 2017
- Traffic and Parking Assessment by Phil Weaver & Associates dated 20 July 2017
- Waste Management Plan by Rawtec Pty Ltd dated July 2017
- Building Services Design Report by Lucid Consulting dated 7 July 2017
- ESD Report by $D^2$ dated 2 August 2017
- Stormwater Management Report by Structural Systems dated 7 July 2017
- Acoustic Design Advice by Resonate Acoustics date 30 June 2017
- Response to reps, Council and ODASA by Future Urban Group dated 19 December 2017

2. Prior to Development Approval for superstructure works, the applicant shall submit a final detailed schedule of external materials and the screening devices for the air-conditioning units on balconies in consultation with the Associate Government Architect to the reasonable satisfaction of the State Commission Assessment Panel.

3. All vehicle car parks, driveways and vehicle entry and manoeuvring areas shall be designed and constructed in accordance with Australian Standards (AS/NZS 2890.1:2004 and AS/NZS 2890.6.2009) and be constructed, drained and paved with bitumen, concrete or paving bricks in accordance with sound engineering practice and appropriately line marked to the reasonable satisfaction of the SCAP prior to the occupation or use of the development.

4. All bicycle parks shall be designed and constructed in accordance with Australian Standard 2890.3-2015.

5. The recommendations detailed in the Traffic and Parking Assessment, dated 20 July 2017 by Phil Weaver & Associates, forming part of this consent shall be fully incorporated into the development to the reasonable satisfaction of the SCAP. Such measures shall be made operational prior to the occupation or use of the development.

6. A detailed landscaping plan shall be submitted to the reasonable satisfaction of the SCAP prior to Building Rules Consent being granted for superstructure works. This shall identify planting medium depths, irrigation methods and other features of the landscaping scheme to demonstrate viability of all plantings and lawn. The updated detailed landscaping plan shall be reflected, as necessary, in all other relevant plans and drawings (including, for example, sectional drawings).

7. Landscaping shown on the approved plans shall be established prior to the operation of the development and shall be maintained and nurtured at all times with any diseased or dying plants being replaced.

8. A watering system shall be installed at the time landscaping is established and operated so that all plants receive sufficient water to ensure their survival and growth.

9. All external lighting on the site shall be designed and constructed to conform to Australian Standard (AS 4282-1997).

10. All stormwater design and construction shall be in accordance with Australian Standard AS/NZS 3500.3:2015 (Part 3) to ensure that stormwater does not adversely affect any adjoining property or public road.

11. A proprietary stormwater treatment device (i.e. Gross Pollutant Trap) shall be installed within the carpark in accordance with Council and EPA Water Quality Guidelines. This system shall be regularly inspected, cleaned and maintained in good working order, with gross pollutants, sediments, oil and grease removed by the facility operator (at regular intervals) for the life of the development.

12. Stormwater management on-site accords with submitted details with a maximum of 8 outlets distributed equi-distant along Unley Road and Hart Avenue frontages

13. The hours for waste collection vehicles to enter and exit the site shall be restricted to Monday to Friday: 7am to 5pm; with no collection on a Saturday or Sunday

14. Prior to Development Approval for superstructure works, the applicant shall submit a final detailed schedule of external materials and finishes in consultation with the Government Architect to the reasonable satisfaction of the SCAP.

15. The acoustic attenuation measures recommended in the Acoustic Design Advice, dated 30 June 2017 by Resonate Acoustics, shall be fully incorporated into the building rules documentation to the reasonable satisfaction of the SCAP. Such acoustic measures shall be made operational prior to the occupation or use of the development.

16. A Construction Environment Management Plan (CEMP) shall be prepared and implemented in accordance with current industry standards – including the EPA publications "Handbook for Pollution Avoidance on Commercial and Residential Building Sites – Second Edition" and, where applicable, "Environmental Management of On-site Remediation" – to minimise environmental harm and disturbance during construction.

**ADVISORY NOTES**

a. This Development Plan Consent will expire after 12 months from the date of this Notification, unless final Development Approval from Council has been received within that period or this Consent has been extended by the State Commission Assessment Panel.

b. The applicant is also advised that any act or work authorised or required by this Notification must be substantially commenced within 1 year of the final Development Approval issued by Council and substantially completed within 3 years of the date of final Development Approval issued by Council, unless that Development Approval is extended by the Council.

c. The applicant has a right of appeal against the conditions which have been imposed on this Development Plan Consent. Such an appeal must be lodged at the Environment, Resources and Development Court within two months from the day of receiving this notice or such longer time as the Court may allow. The applicant is asked to contact the Court if wishing to appeal. The Court is located in the Sir Samuel Way Building, Victoria Square, Adelaide, (telephone number 8204 0289).

d. Due consideration should be given to the residential context of the subject site. In particular, consideration should be given to management of noise associated with patron behaviour, vehicle movements etc outside of normal operating business hours.

e. The Unley (City) Council has advised that an authorisation may be required under Section 221 of the Local Government Act 1999 for the encroachment of your structure or building in, on, across, under or over the public road. Please note that the council may charge an annual fee and that the authorisation may be issued on an annual basis for any encroachment that attracts such a fee. The council may also require any unauthorised encroachments to be removed.

f. Development Approval will not be granted by Unley (City) Council until Building Rules Consent and/or Encroachment Consent under the Development Act 1993 have been obtained. The Unley Council has advised that a separate application must be submitted for such consents. No building work or change of building classification is permitted until the Development Approval has been obtained.

g. All Council, utility or state-agency maintained infrastructure (i.e. roads, kerbs, drains, crossovers, footpaths etc.) that is demolished, altered, removed or damaged during the construction of the development shall be reinstated to Council, utility or state agency specifications. All costs associated with these works shall be met by the proponent.

h. Any proposed works with the public realm adjacent to the site, including the installation of street furniture, bicycle parking infrastructure and planting of street trees shall be undertaken in consultation with Unley (City) Council.

**Karl Woehle**
**Planning Officer**
**DEVELOPMENT DIVISION**
**DEPARTMENT OF PLANNING, TRANSPORT and INFRASTRUCTURE**

LOCALITY PLAN

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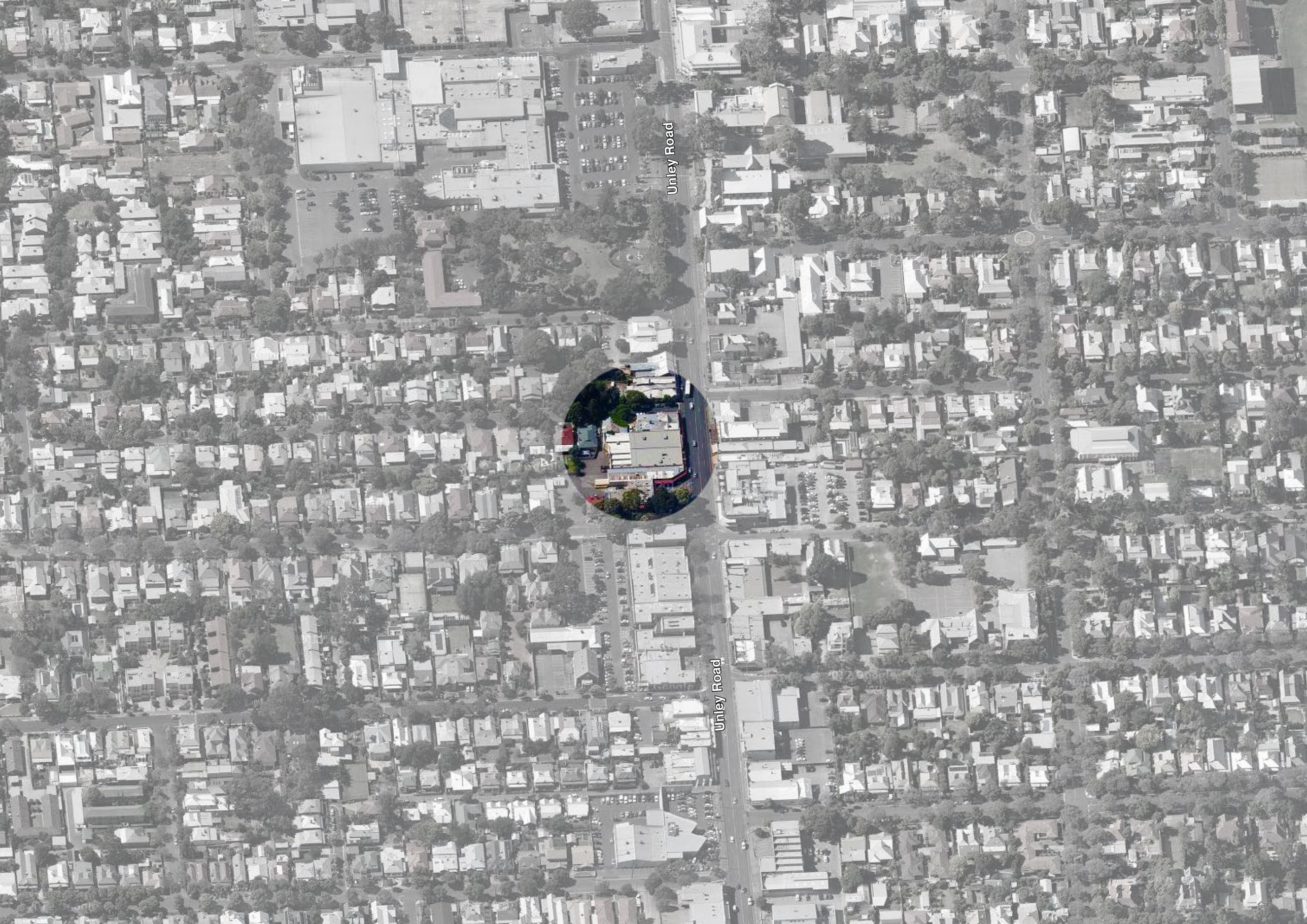

Unley Road
Unley Road

# 246 Unley Road

## We propose responsively designed mixed-use apartments that bring a high level of amenity to increased density that can serve as a model for future developments.

## Contents


**Proposal Summary**
Critical Information Summary

**Introduction**
Tectvs
Tectvs with Catcorp

**Urban Context**
Site Conditions

**Design Response**
Precedents
Materials
Interior Precedents
Interior Materials
ESD
Movement
Previous Development Scheme
Concept

**Architectural Drawings**

**Design Proposal**
Conceptual Visualisations

**Building Matrix**
Yield / Area Matrix

**Development Team**
Team

# Proposal Summary

## Critical Information Summary

**Summary**

Tectvs have prepared this report in association with Catcorp for Development Assessment. The development site is located at 246 Unley Road, Unley, amalgamating existing allotments to form a development site with frontages on Unley Road and Hart Avenue.

This package includes a detailed site and contextual analysis, with design elaboration including proposed plans, and visualisations.

We propose responsively designed mixed-use apartments that bring a high level of amenity to increased density that can serve as a model for future developments.

**Team**

Catcorp | Tectvs | Future Urban Group | Hassell | Rawtec | Phil Weaver | Dsquared | Resonate | Lucid Consulting | Structural Systems

**Description**

The proposed development includes a seven storey mixed-use apartment building that includes a commercial tenancies on the ground floor (with associated car parking).

**Yield**

- Retail tenancies (with associated car parking)
- 59 private apartments (with associated car parking)

**Details**

- Mixed-use development (including proposed commercial tenancies at ground level)
- Ground and basement level car parking (private and public)
- Separate access points

**Street Frontages**

- Unley Road
- Hart Avenue

# Capability

# Introduction

## Tectvs

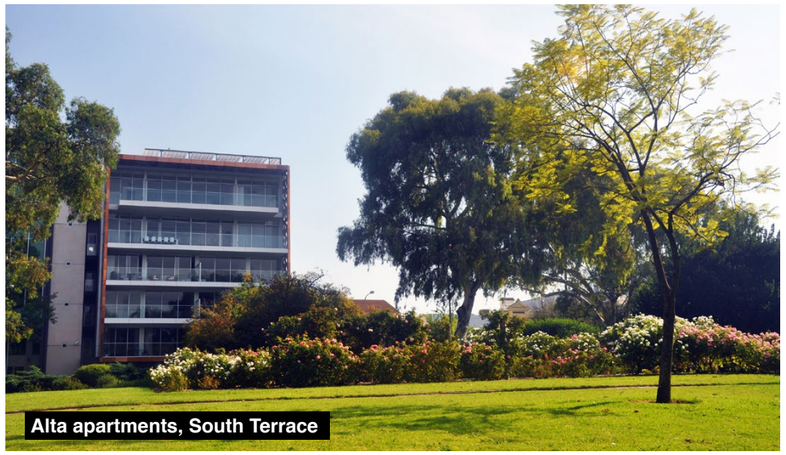
### Mixed-Use Apartments

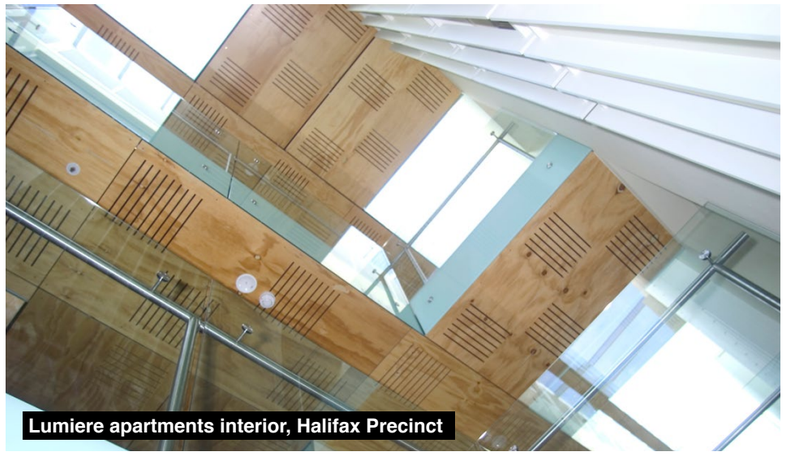
Tectvs has delivered a wide range of projects that form a body of expertise proven in its ability to yield innovative design solutions across multiple building and facility types, in harmony with commercial realities, environmental and community sensitivities. Tectvs has been at the forefront of the successful transformation of the inner-city Adelaide market for mixed-use apartment developments for almost 30 years.

Lumiere Apartments, Halifax precinct

Air Apartments, Glen Osmond Road

Luminaire. Bowden


Alta apartments, South Terrace


Lumiere apartments interior, Halifax Precinct

Gilbert Street, Adelaide CBD

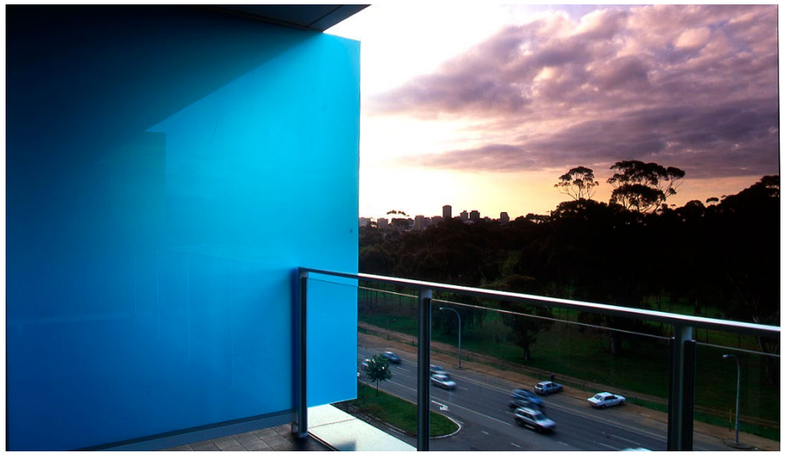
Halifax Townhouses, Halifax Precinct

The Watson Art Series Hotel, Walkerville

Jasmine Apartments, West Lakes

# Introduction

## Tectvs



**Air Apartments, Glen Osmond Road (2005)**

*Australian Institute of Architects - Commendation (Commercial Interiors) 2006*

A series of mid-rise apartments with public open spaces redefine the city fringe, speaking to the river through parkland views and well-designed residencies.

The “old ETSA building” had stood in empty neglect on the edge of the Adelaide Park Lands for a decade. The twin-towers of the 1960’s Modernist office development on Greenhill Road had been the subject of a succession of ill-fated redevelopment schemes, with the failures adding a layer of notoriety to the decaying site.

In 2002, a new owner, The Pickard Group, came with both the vision and the resources to breath new life into the saga. It charged Tectvs with turning the 40-year-old cream brick edifice into Adelaide’s premier apartment complex, incorporating the high level of amenity and servicing that ‘empty nesters’ and young professionals were demanding in their migration to a convenient urban lifestyle.

The outcome was Air, a $100-million transformation comprising 140 apartments with unsurpassed panoramic views across Adelaide, the Park Lands and the inner suburbs, from the hills to the sea. Tectvs also incorporated a new basement car park, inserted a new floor level into the existing double-height ground floor to accommodate communal facilities, and placed two-level penthouse modules atop the 10-storey north tower.

University of Adelaide architecture academic Dr Katherine Bartsch’s critique of the redevelopment said Tectvs had realised a Corbusian vision with its design solution and that its “revision of radiant ideals is exceptional given the plethora of debased Corbusian imitations across the post-War globe”. Redesigning the office building also provided a number of commercial and environmental benefits. It incorporated large, continuous balcony overhangs to maximize shading and minimize heat load and energy use, and to provide generous outdoor living areas sheltered from the weather.

# Introduction

## Tectvs

**Alta Residential Apartments, South Terrace (2012)**

*Australian Institute of Architects - Architecture Award (Residential - Multiple Housing) 2013*

New city residential developments tend to take their design references from their neighbours or the streetscape. The strict grid that defines Adelaide and the uniformity of its low-rise forms beyond the city centre shape most design responses. Precious exceptions occur when the landscape is a collaborator not a constraint. South Terrace gave Tectvs the design clues for a distinctive apartment building.

As the southern boundary of the original Adelaide city plan, South Terrace is a historic presence defined by its large old street trees and enduring and exclusive views of the southern parklands. Trees, foliage, the seasons and light provide a continuum of change and movement for South Terrace dwellings and dwellers.

Tectvs designed six-storey Alta as an embroidered reflection of its setting on the edge of a natural landscape. A band of natural finish copper perforated by irregular openings of white translucent glass simulates the interplay between light, air and leaves

Interiors are spacious, bright and feature piercing views of the Southern Parklands framed to collaborate with the individual dwellings. A sculptural laser-cut metal screen provides a similar texture at ground level and the parklands presence is capped with a roof garden.

Alta apartments provide a refined luxury that contributes to the city from both street-level and balcony level.

# Introduction

## Tectvs

**Residential Apartments, Gilbert Street (2007)**

*Australian Institute of Architects - Newell Platten Award (Residential Architecture - Multiple Housing) 2009*

The twin pressures of a narrowing development approval process for residential development in inner-city Adelaide, and increasingly complex compliance with the Building Code of Australia as it moved closer to addressing accessibility and environmental issues, resulted in Tectvs working with developer Forme Projex to re-invent the old 'walk-up flats' model for city apartment developments.

The site at 115-119 Gilbert Street provided the perfect opportunity to move into the gap between the increasingly marginalised townhouse development model and the over-supplied high-rise apartment building.

Tectvs refreshed a simple and time-honored model for medium-to-high-density housing that had been lost in the late 20th-century dash into expensively glitzy and highly serviced apartment complexes. The design provided the expected mod-cons of intercom and sleek kitchen and appliances, plus undercover car parking and secure bike parking. But the apartments were still essentially 'walk-ups', with no gimmicks and few gadgets, and traditional passive design - north facing, sun shading, robust building fabric, flow-through ventilation, natural light, low-energy fittings, rainwater tanks, gas hot water, low toxicity materials. Tectvs created simple and affordable amenity.

The bright and youthful addition to the streetscape in the gritty mix of the city's South West corner contributed to a new awareness of an old precinct.

# Introduction

## Tectvs

**The Artisan Apartments, Bowden (In-Progress)**

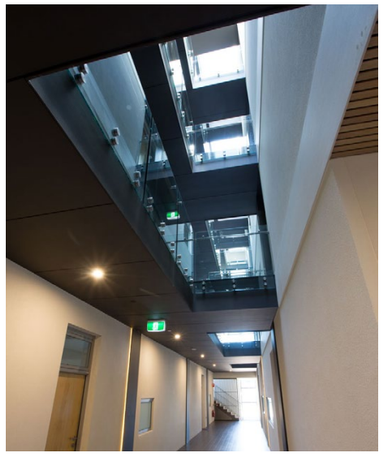
The successful and ongoing urban renewal of Bowden demonstrates the potential of design-led and people-focused architecture. Responsive apartments tied to a pedestrian orientated public realm have contributed to a built program tied to place-making. We are continuing the success of Bowden by contributing to this new form of city living. We believe in good design which gains a social role as part of the community.

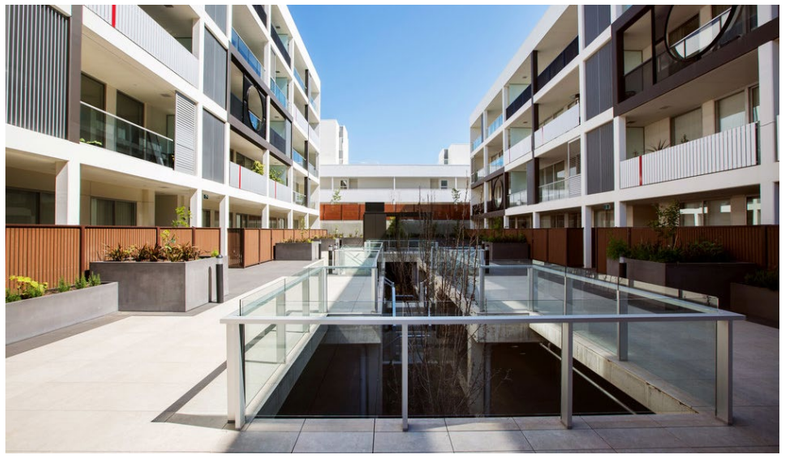
**Tectvs and Bowden**

The Artisan is the most recent addition to the Bowden precinct by Tectvs, having successfully completed the neighbouring apartment series ‘Luminaire’ in 2016. Tectvs’s ongoing commitment to Bowden has been recognised in the shared design values of urban living, public spaces, high amenity apartments and integrated design solutions.

# Introduction

## Tectvs with Catcorp





**Luminaire Apartments (2016)**

*National Award for Medium Density Housing, Urban Development Institute of Australia Awards for Excellence (2016) - Catcorp*

Two energetic residential apartments overlook a tree-lined piazza between 5th and 6th street at the new Bowden development. At four and five storey's respectively, Luminaire caters to a wide-range of residencies - from studio to 3 bedroom - revealing themselves within the striking facade that draws on the Industrial topology of the former Clipsal Electronics site. With Luminaire apartments Tectvs provided the spark to light up the burgeoning site, redefining city living in a suburb that will eventually be home to 3,500 residents.

Harkening back to similar techniques used in industrial brick making, Tectvs drew on the heritage of former Clipsal factory site by working Luminaire's aesthetics with industrial rigour. Stacking, stepping and framing became key form generators, surfacing bold geometries into the materiality and form of the facade. The re-appearing forms were coloured, with windows variably and contemporarily inserted to render a postmodern overlay of geometric elements.

Inside, light is key to the high quality of amenity in the end-product. Designing light into open-plan living and bedroom spaces drove the program of the building. Rather than being corridors, the central passageways are treated like bridges in the sky. Individual apartments are governed around full width balconies of a generous 2-2.5m depth, allowing them to function as outdoor rooms. Communal corridor spaces are bathed in brightness from light wells. Natural light is coupled with a mix of active and passive ventilation strategies to provide a comfortable living atmosphere and a 5-star greenstar rating.

The success of the form is underpinned by a semi-depressed, semi-naturally ventilated basement parking undercroft; a simple engineering solution which has allowed activation of the ground plane in-line with Bowden's community atmosphere.

Situated at a key arterial entrance, Luminaire's 87 apartments and generous central plaza presents the developing Bowden precinct with design confidence to set the conversation high on the future of city living.

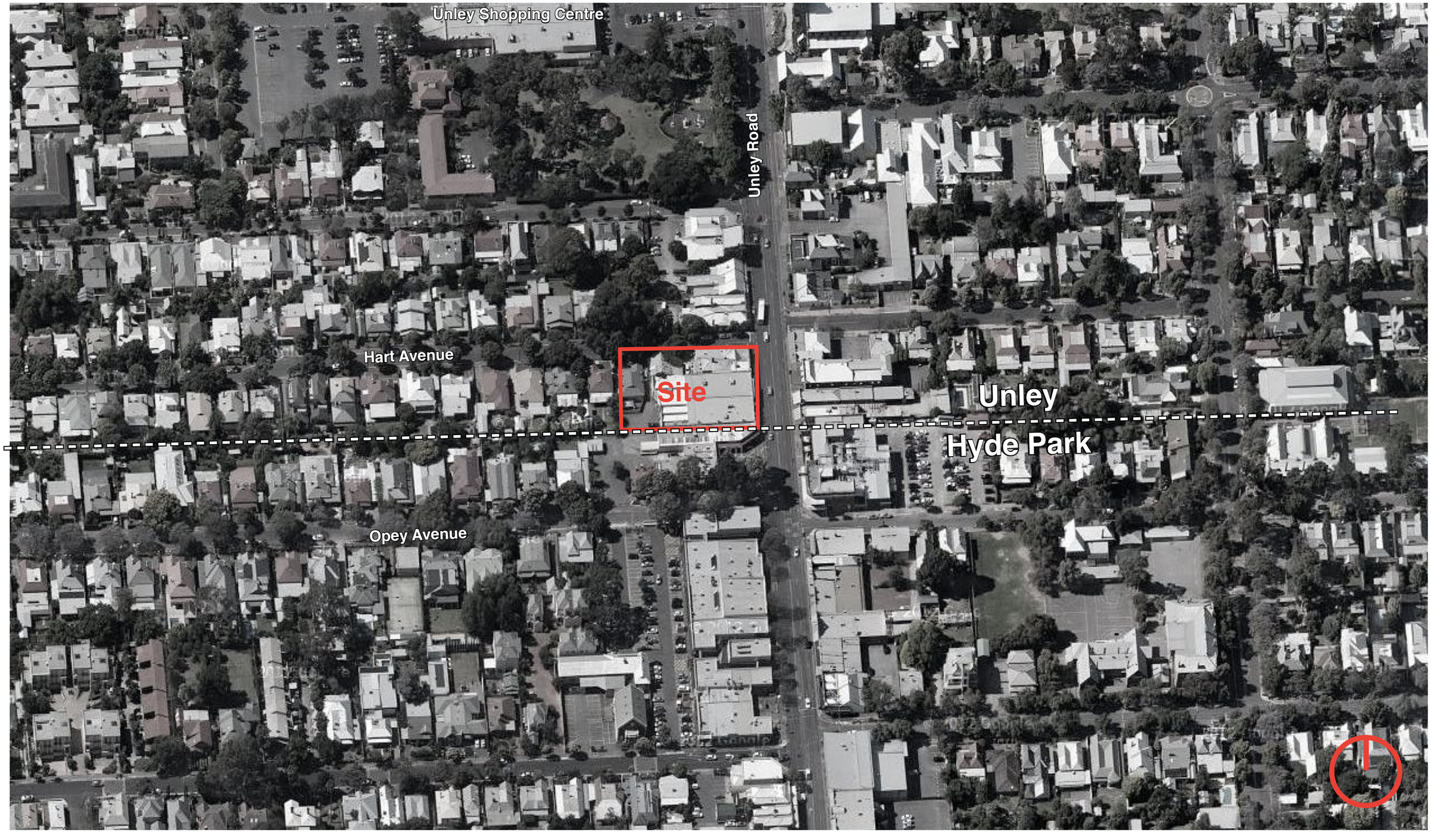
# Urban Context

# Urban Context

## Unley Road

**Urban Corridor**

The proposal sits comfortably within the Urban Corridor zone that speaks to increased intensity and scale, but critically also mixed use, medium and high rise buildings with ground floor uses that create active and vibrant streets with residential development above. Within this framework, new developments in Unley can serve as a model for successful urban renewal and inner city living by promoting higher density living and place-making within these mixed-use scenarios.



# Urban Context

## Site Conditions

**246 Unley Road**

The site proposal fronts two key streets of variable built and urban character: Unley Road on it's Eastern side and Hart Avenue on its Northern.

Looking South on Unley Road

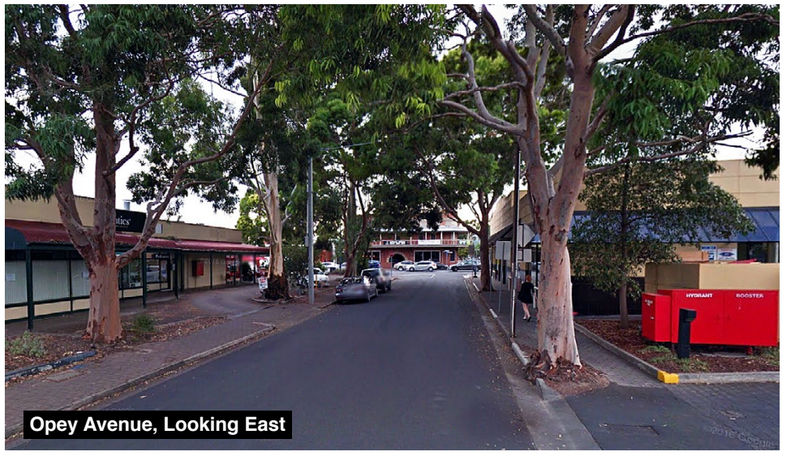
Looking North on Unley Road

# Urban Context

## Site Conditions

**246 Unley Road**

The site proposal fronts two key streets of variable built and urban character: Unley Road on it's Eastern side and Opey Street on its Northern.



# Site Analysis

Supporters
Objectors
Local Heritage Place

Soldiers Memorial Gardens
Unley Uniting Church
St. John Ambulance SA
Zone Boundary
Thomas Street
NAB Building
Unley Road
Zone Boundary
Fairford Street
Hart Avenue
Site
~20M Radius
~40M Radius
~60M Radius
Unley Institute & Library
Cremorne
Zone Boundary
Opey Avenue
Zone Boundary
Cremorne Street
RS(BF)
Residential Streetscape
(Built Form)
UrC
Urban Corridor
RHC
Residential Historic
Conservation

# Site Analysis

## Streetscape Studies

**East facing streetscape**

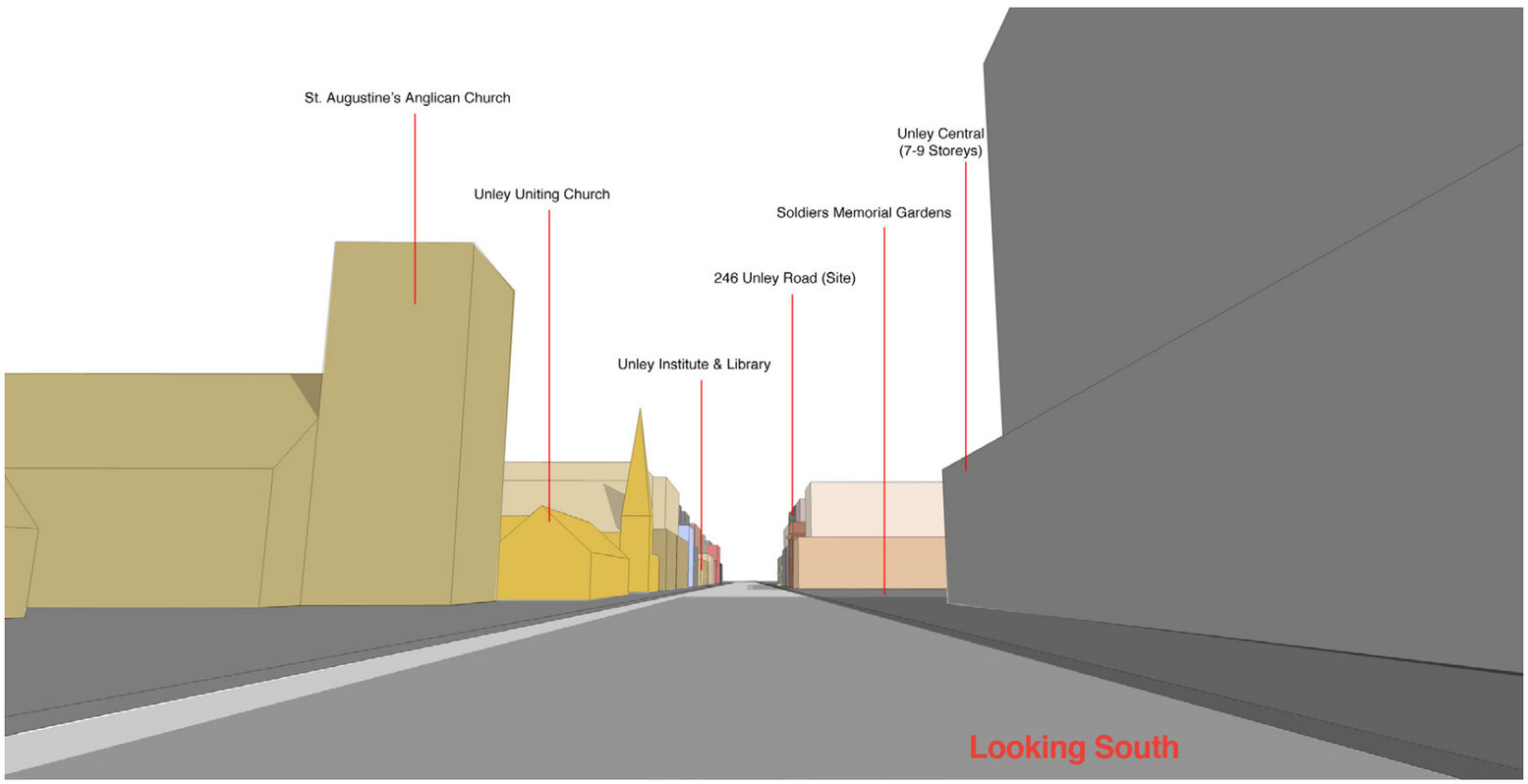
### Future

### Existing

# Site Analysis

## Future Streetscape

**Unley Road**



# Site Analysis

## Future Streetscape

**Hart Avenue**

# Design Response

# Design Response

**The proposed development addresses the material character of Unley, with clever articulation of massing, programmatic distribution, and material choice situate the development within the broader urban interface.**

**Development of a high design standard and appearance responds to and reinforces positive aspects of the local environment and built form.**



**246 Unley Road Mixed Use Development**

**General Strategic Vision**

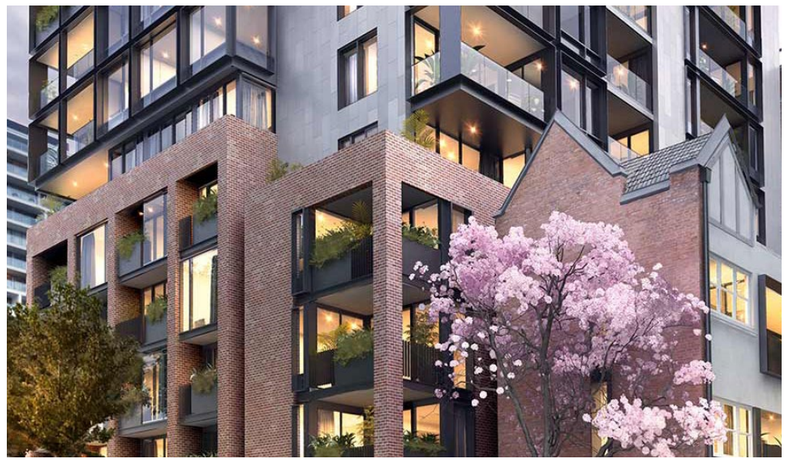
In alignment with Unley Council Development Plan (5th May 2016), the proposal targets increased development intensity and scale, with a broader contribution to urban design quality being improved by reinforcing distinctive parades of building along Unley Road, with pedestrian amenity and integrated parking areas to the rear of the village strips through the creation of new laneway at the rear of the site.

Replacing existing buildings and land uses not contributing to a locality's character within areas of historic and valued streetscape character where revitalisation is warranted;

The proposal focuses on the development on the improvement of character buildings and new buildings respecting their context and complementing surrounding streetscape and desired character

**Design Objectives**

- building height, mass, proportion and siting;
- external materials, patterns, colours and decorative elements;
- roof form and pitch;
- facade articulation and detailing;



# Design Response

## Precedents

**Mixed-Use Massing Opportunities**

Opportunity exists for a podium to adopt material integration with the variable character of Unley Street. Set-backs between residential apartments and the ground floor commercial tenancy has scope to be articulated formally as well as spatially.

# Design Response

## Precedents

**Interior Urban Character**

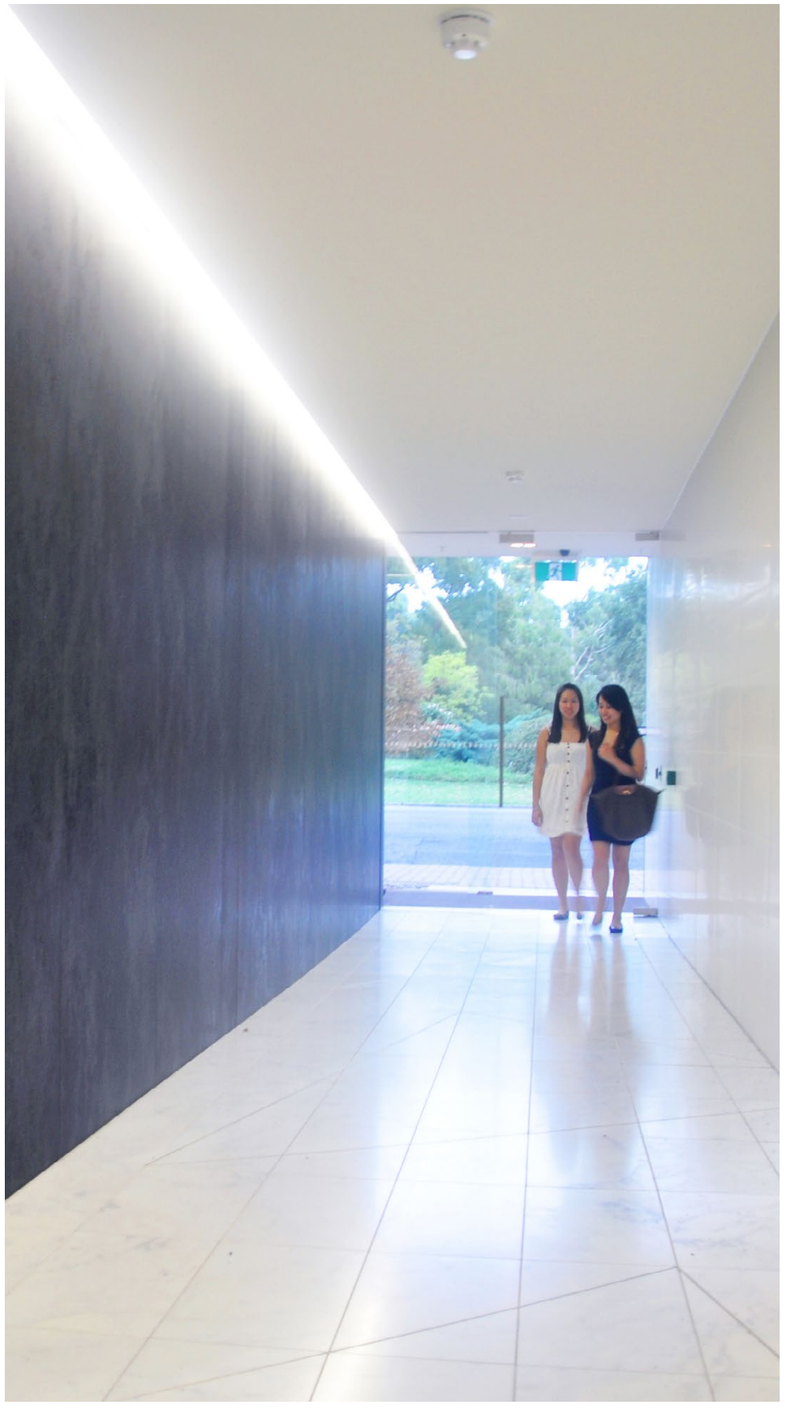
Apartment interiors that speak to an urban lifestyle through access to light, a relationship to materiality, and a commitment to urban living.

# Design Response

## Precedents

**Ground Floor Entrances**

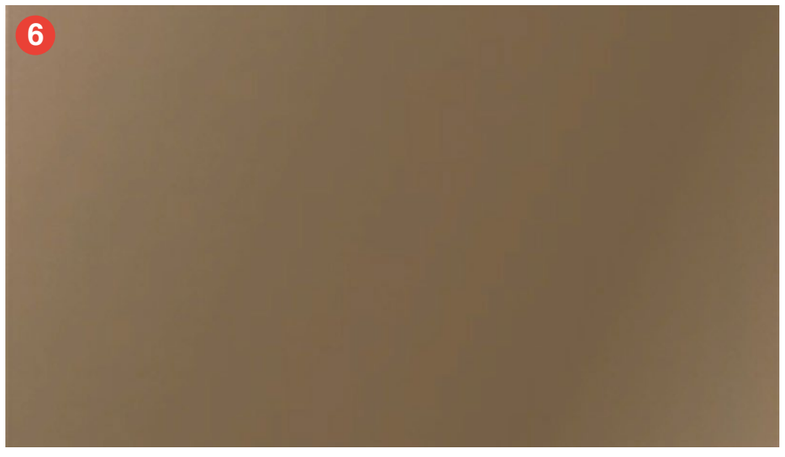
Entrances that speak to the urban character of Unley through historic interfaces and contemporary treatments.



# Design Response

## Interfaces

*Exterior material choices focus on interfacing with the variable character of Unley Road*



## Materials

**External Finishes & Textures**

Details of proposed external materials and finishes.

**Material List**

1. Metal Screening
2. Metal cladding
3. Steel
4. Stained pre-cast
5. Stonework
6. Tinted glass
7. Clear glass

# Design Response

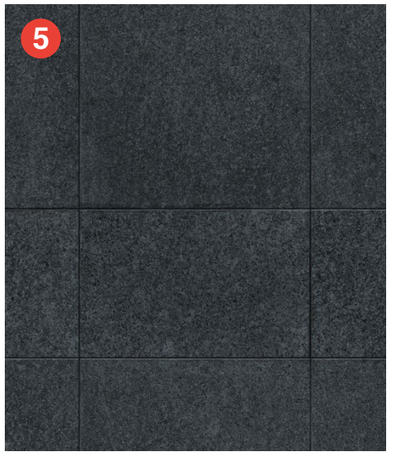
## Materials

**Internal Finishes & Textures**

Details of proposed internal materials and finishes.

## Upmarket & Urban

*Interior material choices provide a contemporary reading on urban, with emphasis on a high quality of finish.*



**Material List**

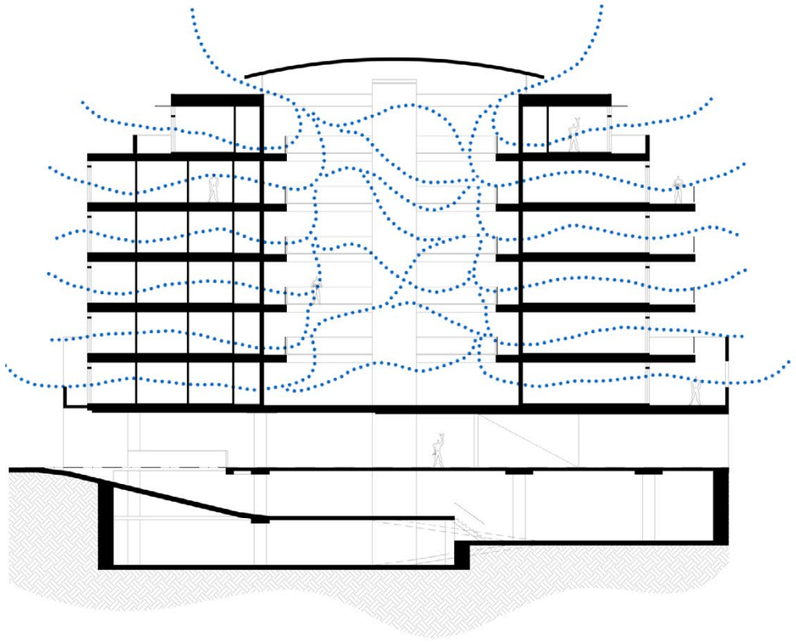
1. Stone composite bench-top
2. Timber floorboards
3. Wall tile
4. Timber veneer
5. Floor Tile
6. Clear glass
7. Carpet

# Design Response

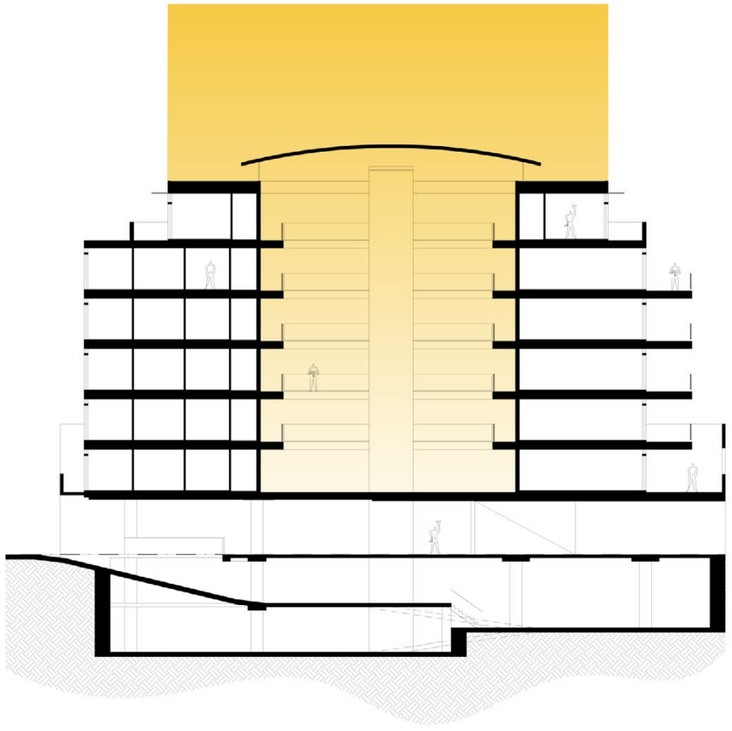
## ESD

**Sustainable Design Solutions**

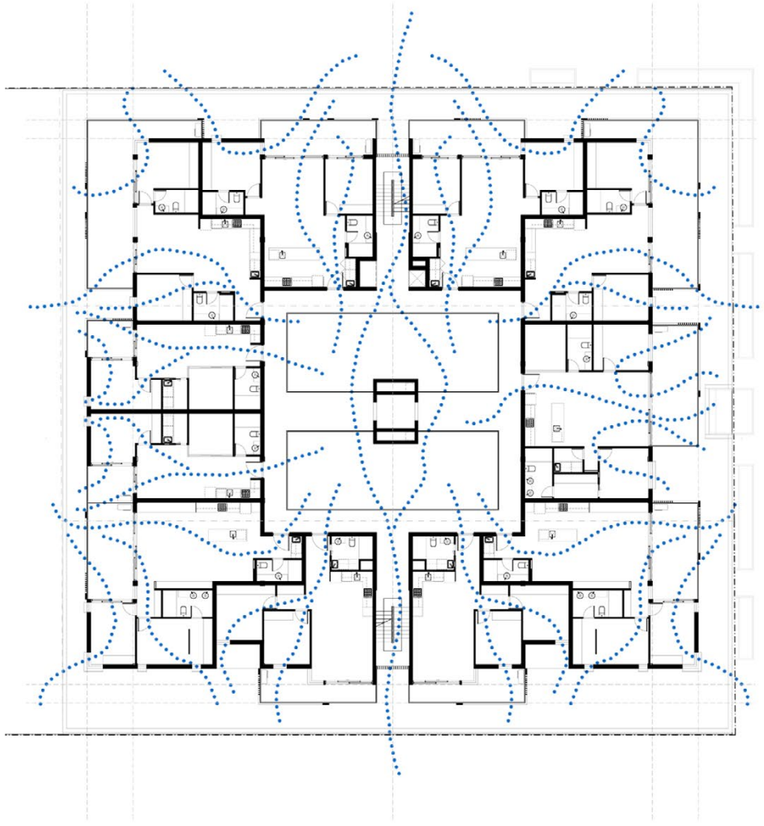
The intent of our ESD initiatives is to reduce the demands on active systems by enhancing the passive performance of the building. This includes optimising the network of installed systems with the development's built form, including orientation, shading, insulation, natural light, ventilation and lifespan.



**CROSS VENTILATION**



**NATURAL LIGHT / CENTRAL ATRIUM**



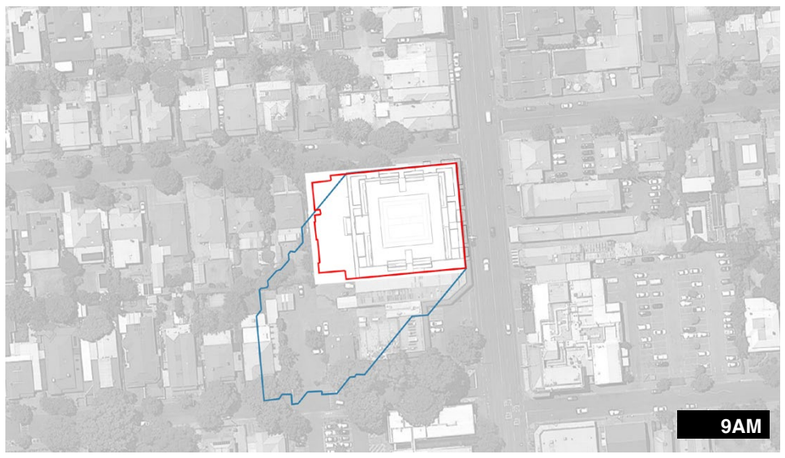
**CROSS VENTILATION**

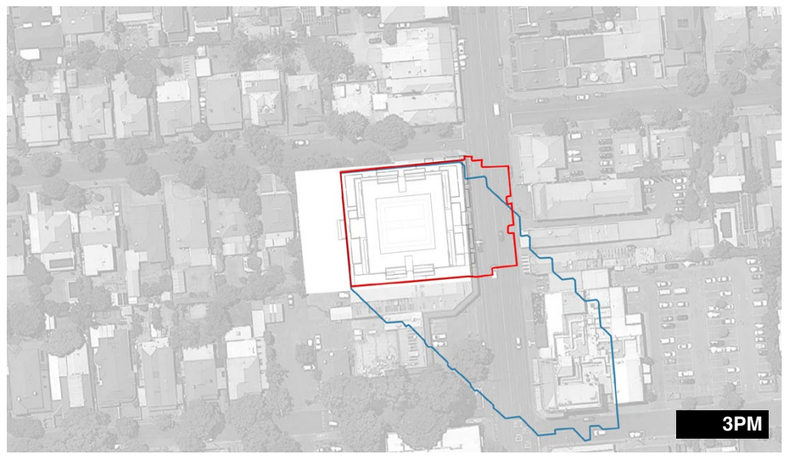
# Design Response

## ESD

**Shadow Study**

Summer and Winter Solstice shown.






**Winter Solstice**
**Summer Solstice**

# Design Response

## Movement

### Public Transport, Bicycle & Pedestrian Linkages

A public transport, bicycle and pedestrian linkage plan showing the proximity of green transport services and solution. The site is located centrally to a broad network of bus and bicycle arterial networks all within close walking distance.

# Design Response

## Movement

**Vehicular & Pedestrian Access**

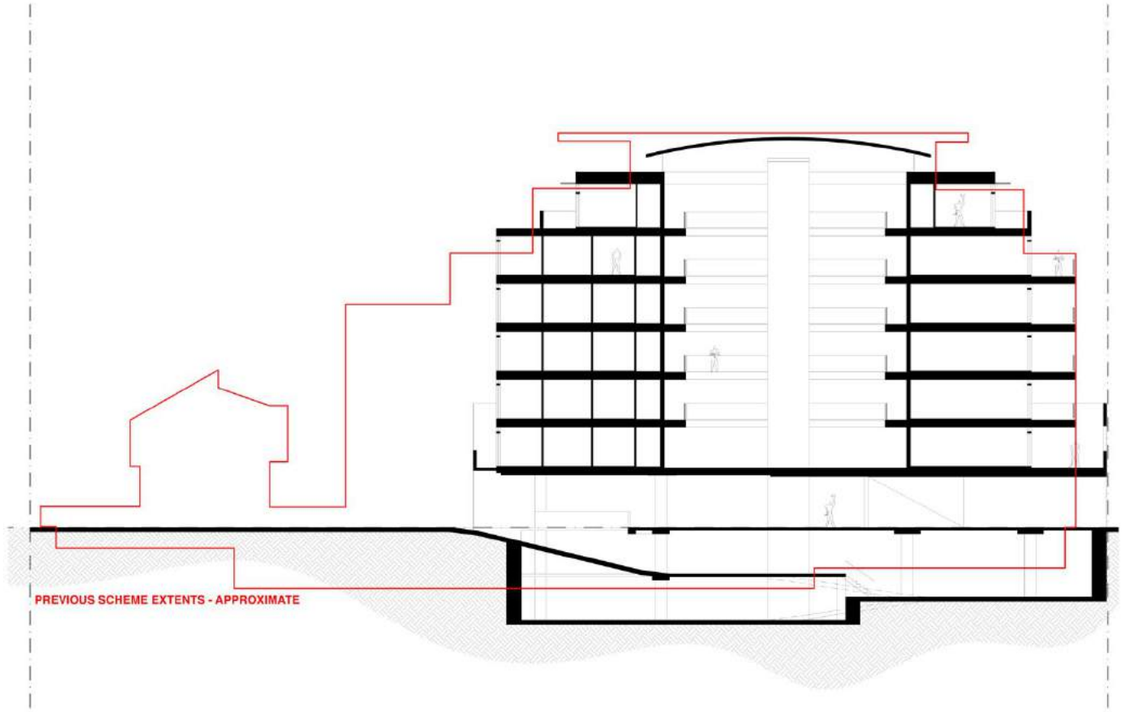
A vehicular and pedestrian access plan showing the an integrated strategy for vehicle services and pedestrian access.

Public Private

# Design Response

## Previous Development Scheme

**Overlay**

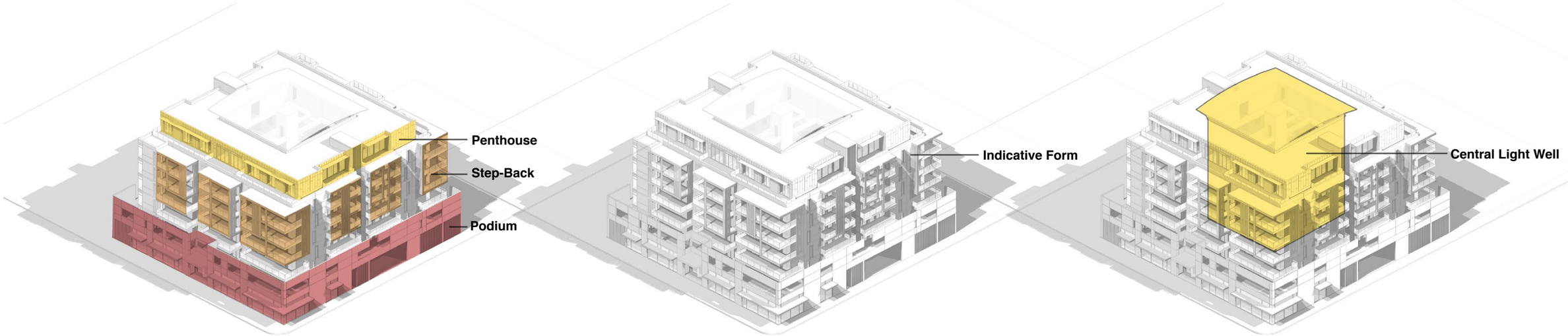


# Design Response

## Massing

**Podium & Light Wells**

Articulation of massing.



# Architectural Drawings

# Executive Summary

| Principle | ODASA | City Of Unley | DPTI | Representors (objectors only) | Addressed | Solution | Reference |
|---|---|---|---|---|---|---|---|
| **Height** | Review of the building height | Building height (and setbacks) | - | 5 storey zone only | N | A more substantial proposal was previously approved for this Site<br><br>Ample setback above 2 storey podium<br><br>Ample setback and appropriate colour and material selection to top storey given | Refer architectural drawings<br>Refer architectural perspective |
| **Built Form** | Review of the built form composition along the Hart Avenue frontage<br><br>Review of massing and three dimensional articulation strategy of the built form above the podium to reduce the apparent bulk<br><br>Review of the podium expression at the northwest and southeast corners | Podium facade detailing and extent of footpath canopies | All development being setback a minimum of 2.13 metres from the Unley Road properly boundary and being kept clear of the 4.5 metres x 4.5 metres corner cut-off at the Unley Road / Hart Avenue junction | - | Y | Increased shopfront and activation along both Unley Road and Hart Avenue frontages and canopies increased to 1.8m where viable<br><br>Driver sight lines held through transparency within 4.5 metre x 4.5 metre corner cut-off with all structural (opaque) elements located outside nominated zone | Refer amended drawings **[P01-v1-1, P10-v1-2]** |
| **Context** | Further information on site context to demonstrate the relationship between the proposal and the existing and future context | - | - | - | Y | Additional information provided highlighting existing and future contexts | Refer existing streetscape diagram<br>Refer future streetscape diagram |
| **Public Realm** | Review of the presentation to Hart Avenue with the view to increase the extent of the active use spaces | Hart Avenue public realm implications including road configuration, lack of room for outdoor dining, loss of on-street parking, street trees pruning and planting | - | - | Y | Secondary crossover deleted and additional shopfront provided along Hart Avenue frontage | Refer amended drawings **[P01-v1-1, P10-v1-2]** |
| **Access** | Consideration of crossover consolidation | - | Access to Hart Avenue being consolidated to a single point located as far from the Unley Road / Hart Avenue junction as practicable<br><br>Provision of a vehicular link between Opey Avenue and Hart Avenue for all vehicles associated with the development in order to enable better traffic distribution to these two streets and their junctions | - | Y | Crossovers consolidated into single point and located as far as possible from noted junction<br><br>Provision for potential link from Hart Avenue to Opey Avenue provided - subject to development of adjacent southern site | Refer amended drawing **[P01-v1-1]** |
| **Overlooking** | Development of effective strategies to manage residential interface impacts, including overlooking | Overlooking minimisation | - | - | N | Ample distance between proposal and adjacent residences | Refer amended drawing **[P08-v1-2]**<br>Refer site analysis highlighting distances |
| **Apartments** | Review of apartment entry sequence<br><br>Refinement of apartment layouts to eliminate inboard bedrooms<br><br>Review of apartment typology to ensure all apartments hae access to adequately sized private open spaces<br><br>Relocation of air conditioning condensers from balconies | - | - | - | Y | Residential lobby is secure<br><br>Study areas given natural light through central void<br><br>Balconies increased where needed to satisfy minimum requirements<br><br>Air conditioning condensers on balconies sufficiently screened | Refer amended drawing **[P01-v1-1]**<br><br>Refer amended apartment type drawings **[T03-v1-1, T04-v1-1]**<br><br>Refer amended drawing **[P05-v1-1]**<br><br>Refer typical air conditioning condenser unit screening strategy diagram |
| **Landscaping** | Further information that demonstrates how the proposed vegetation in the central courtyard and atrium will be sustained and maintained<br><br>Further information that demonstrates the environmental performance of the atrium and comminal circulation spaces | Site landscaping and lack of medium to large trees and rooftop gardens | - | - | Y | Screening above central courtyard provided to increase privacy and amenity to residents and users | Refer amended drawing **[P08-v1-2]** |
| **Materiality** | A high quality of external materials for building and landscaped areas supported by the provision of a materials sample board | - | - | Lack of clarity and unsympathetic | Y | Material samples board provided demonstrating external material selections of high quality and integrity avoiding applied finishes (eg. paint) | Refer material samples board |
| **Parking** | - | On-site parking provision, allocation, design and dimensions<br><br>Hart Avenue traffic and on-street parking management | - | Lack of private carparking<br><br>Compromise access along Hart Avenue<br><br>Increased traffic patterns | N | On-site parking satisfies the demand | Refer provided Traffic Report |
| **Waste** | - | Waste and service vehicle limitations | - | Waste removal frequency | N | Waste pick-up frequency has been kept to a minimum | Refer provided Traffic Report<br>Refer provided Waste Management Plan |

HART AVENUE

UNLEY ROAD

ZONE BOUNDARY

RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

ADJACENT RESIDENCE

ADJACENT SITE

EXISTING TREE TO BE REMOVED

PRIVATE ENTRANCE

2 Metre Setback

OUTDOOR DINING SHOWN NOTIONALLY ONLY
SUBJECT TO FURTHER DEVELOPMENT AND
CONSULTATION WITH RELEVANT AUTHORITIES
NOT FORMING PART OF THIS APPLICATION

4.5M x 4.5M CORNER
CUT-OFF ZONE SHOWN HATCHED
REQUIRED DRIVER SIGHT LINES HELD
THROUGH TRANSPARENT CORNER

CANOPY DEPTH 1.8M

TRANSFORMER
SERVICES
WASH DOWN
WASTE
80sqm
STAIR
ACCESS
WASTE CHUTE
305sqm
SERVICES
LIFT
SECURE RESIDENTIAL LOBBY
MAILBOXES
RAMP DOWN
STORAGE TANKS
TEMPORARY FENCING
FUTURE DEVELOPMENT SITE
BICYCLE PARKING

Potential Link Through
To Adjacent Site

EXISTING BOUNDARY LINE
PROPOSED BOUNDARY LINE FOR FUTURE APPLICATION

FIRST FLOOR SLAB EXTENTS ABOVE SHOWN DASHED
TYPICAL BUILDING EXTENTS ABOVE SHOWN DASHED
BASEMENT EXTENTS BELOW SHOWN DASHED

A-A P08
B-B P09
1.1

**Principles Addressed**

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.1 | 19/12/2017 | DDASA COMMENTS |
| 1.0 | 08/08/2017 | DPC ISSUE |

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CLIENT: CATCORP

PROJECT: UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

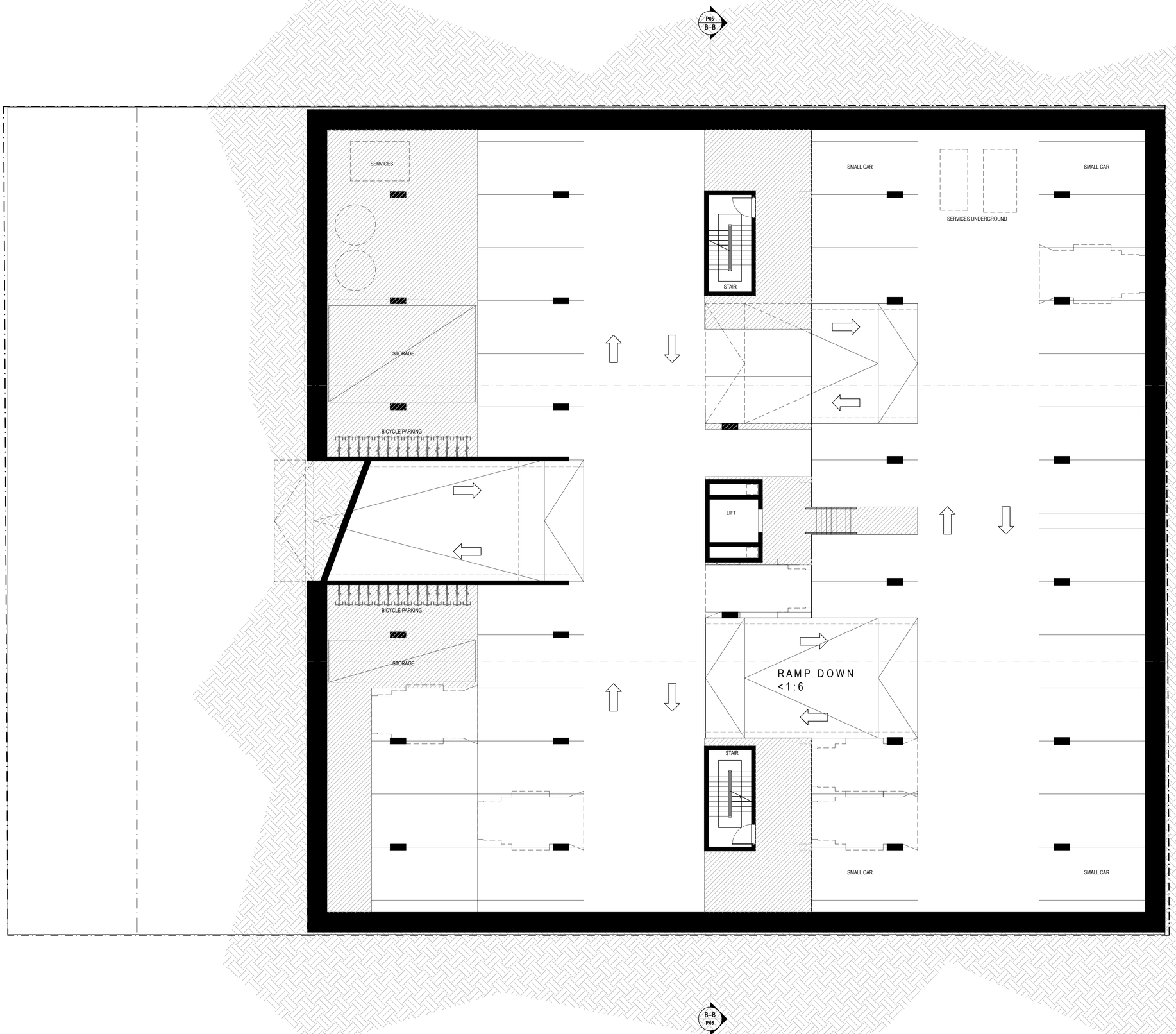
DRAWING: FLOOR PLAN

NORTH

SCALE: AS SHOWN
DATE: DECEMBER 2017

PROJECT NO: 27080
DWG NO: P01
REVISION: 1.1
CHECKED: FB
DRAWN: mdf

36 FIELD STREET ADELAIDE SOUTH AUSTRALIA 5000
P 08 8 410 5200 F 08 8 410 5244 E mail@tectvs.com.au




- BASEMENT
1:100 @ A1 1:200 @ A3

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P02

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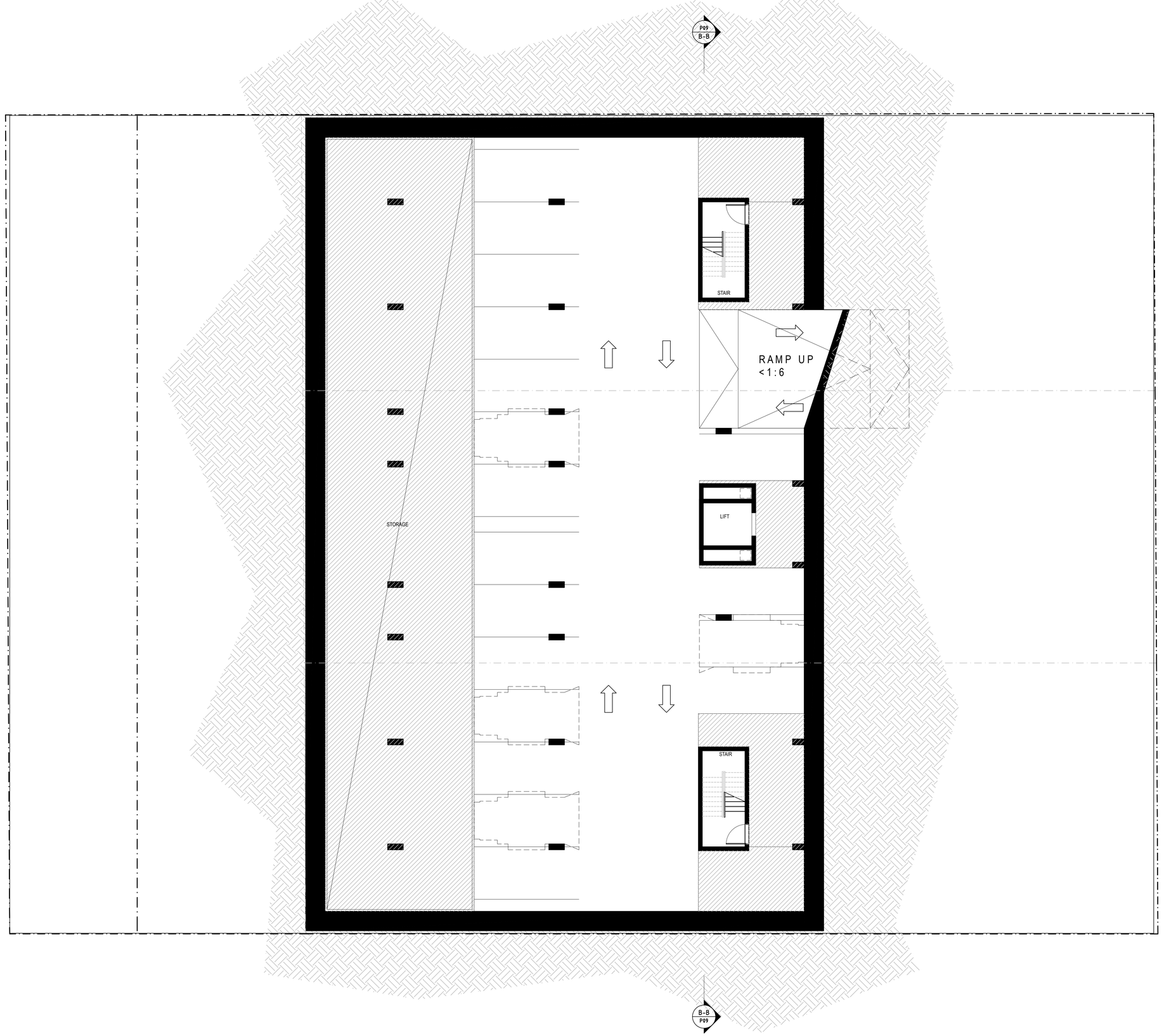


A-A
P08

A-A
P08

## LOWER BASEMENT

1:100 @ A1 1:200 @ A3

| REV | DATE | DESCRIPTION |
|---|---|---|
| 10 | 30/08/2017 | DPC ISSUE |

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P03

| REVISION | CHECKED | DRAWN |
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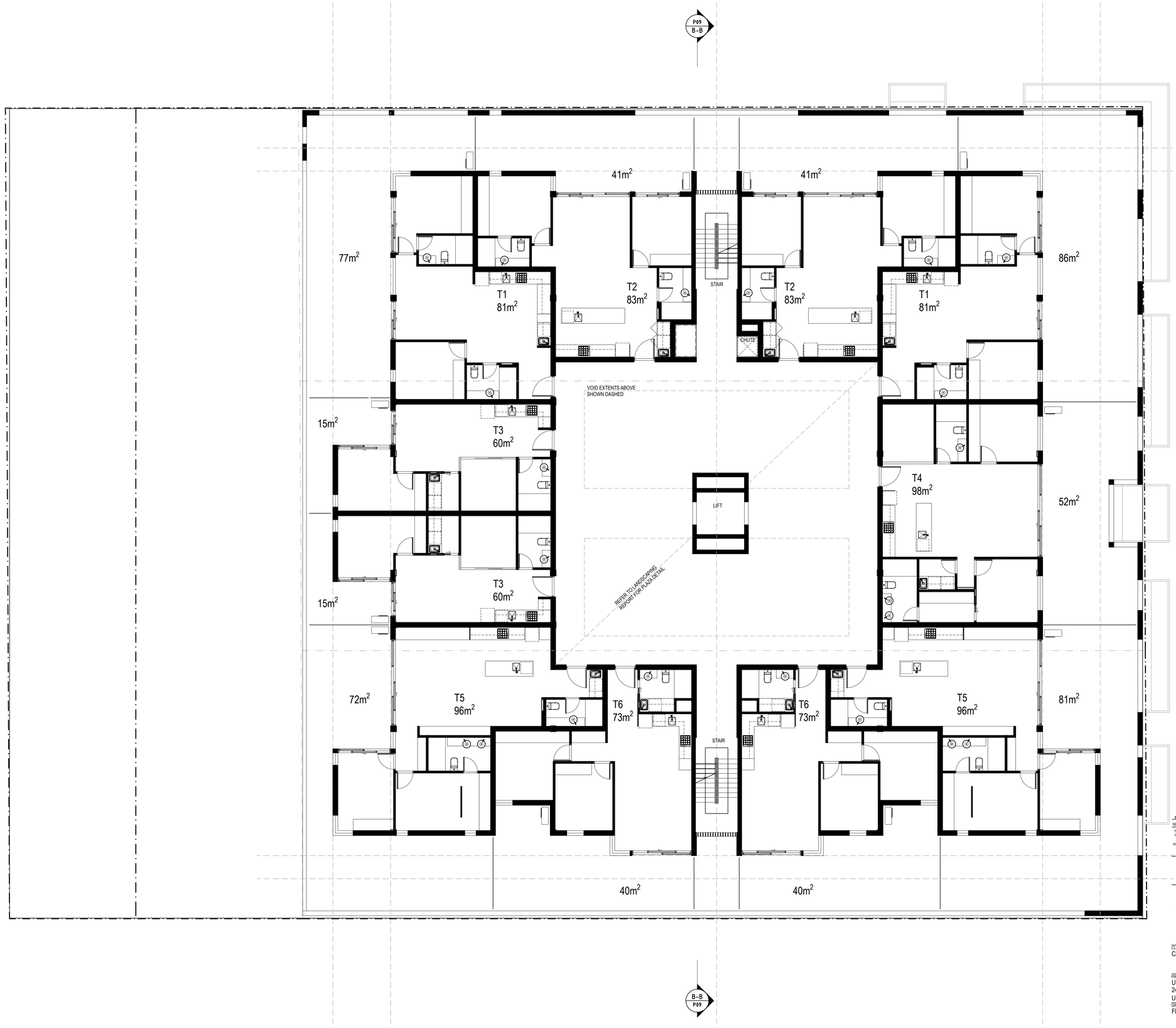


FIRST FLOOR
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10 02/08/2017 DPC ISSUE

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CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P04

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.0 | FB | mdf |

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ZONE_BOUNDARY

RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

A-A
P08

P09
B-B

2 Metre Setback

2 Metre Setback

39m²
T1
81m²
16m²
T2
83m²
STAIR
16m²
T2
83m²
CHUTE
T1
81m²
39m²

1.1
8m²
T3
60m²
SCREENING DEVICE EXTENTS SHOWN NOTIONALLY BELOW
1.1
LIFT
T4
98m²
24m²

1.1
8m²
T3
60m²

20m²
T5
96m²
T6
73m²
STAIR
T6
73m²
T5
96m²
21m²

1.1
18m²
18m²

FIRST FLOOR SLAB BELOW

B-B
P09

A-A
P08

**Principles Addressed**

11 19/12/2017 CDASA COMMENTS
10 20/09/2017 DPC ISSUE
REV | DATE | DESCRIPTION

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CLIENT
CATCORP

PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
DECEMBER 2017

PROJECT NO
27080

DWG NO
P05

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.1 | FB | mdf |

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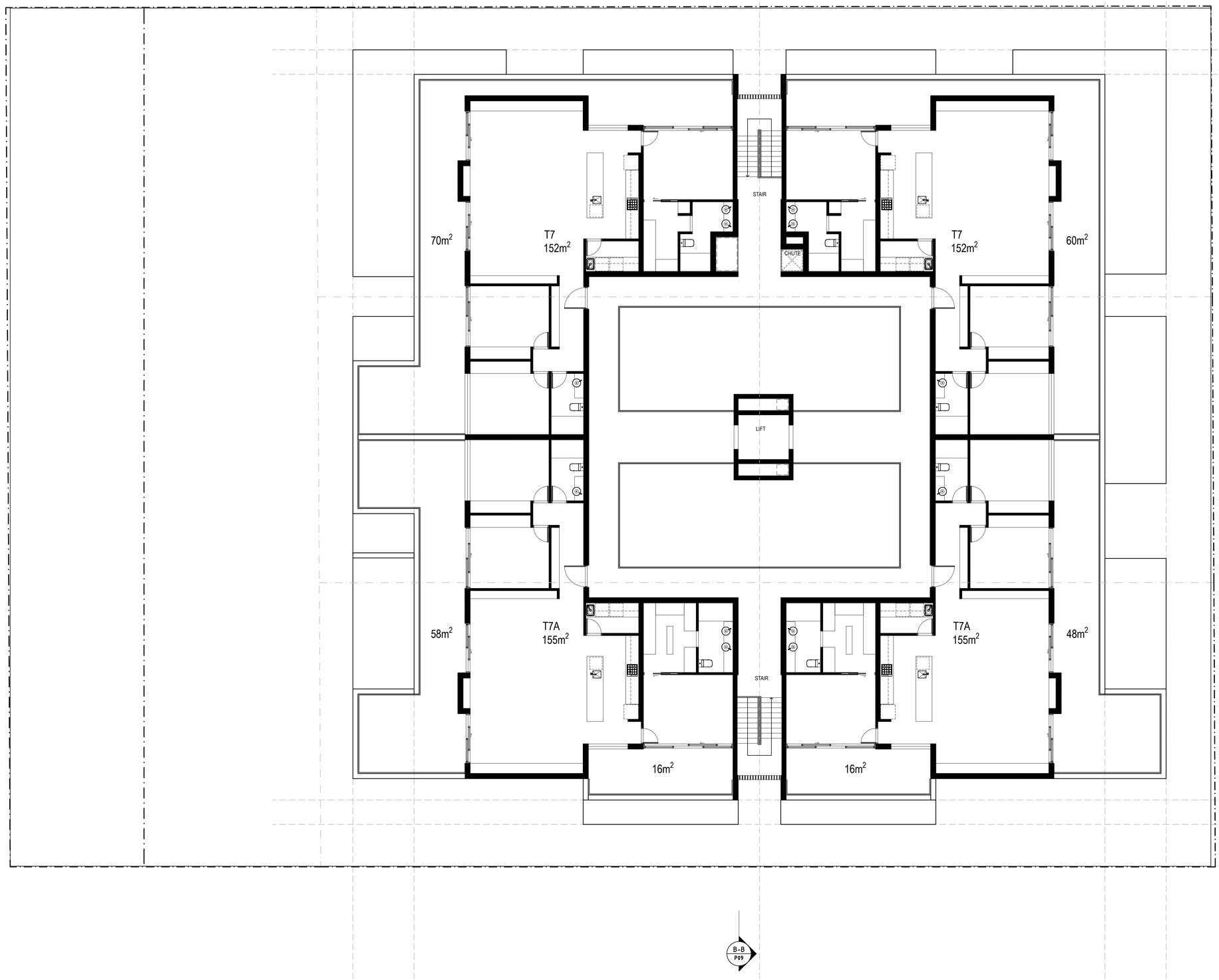
P09
B–B




A–A
P08

A–A
P08

B–B
P09

PENTHOUSE
1:100 @ A1 1:200 @ A3

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
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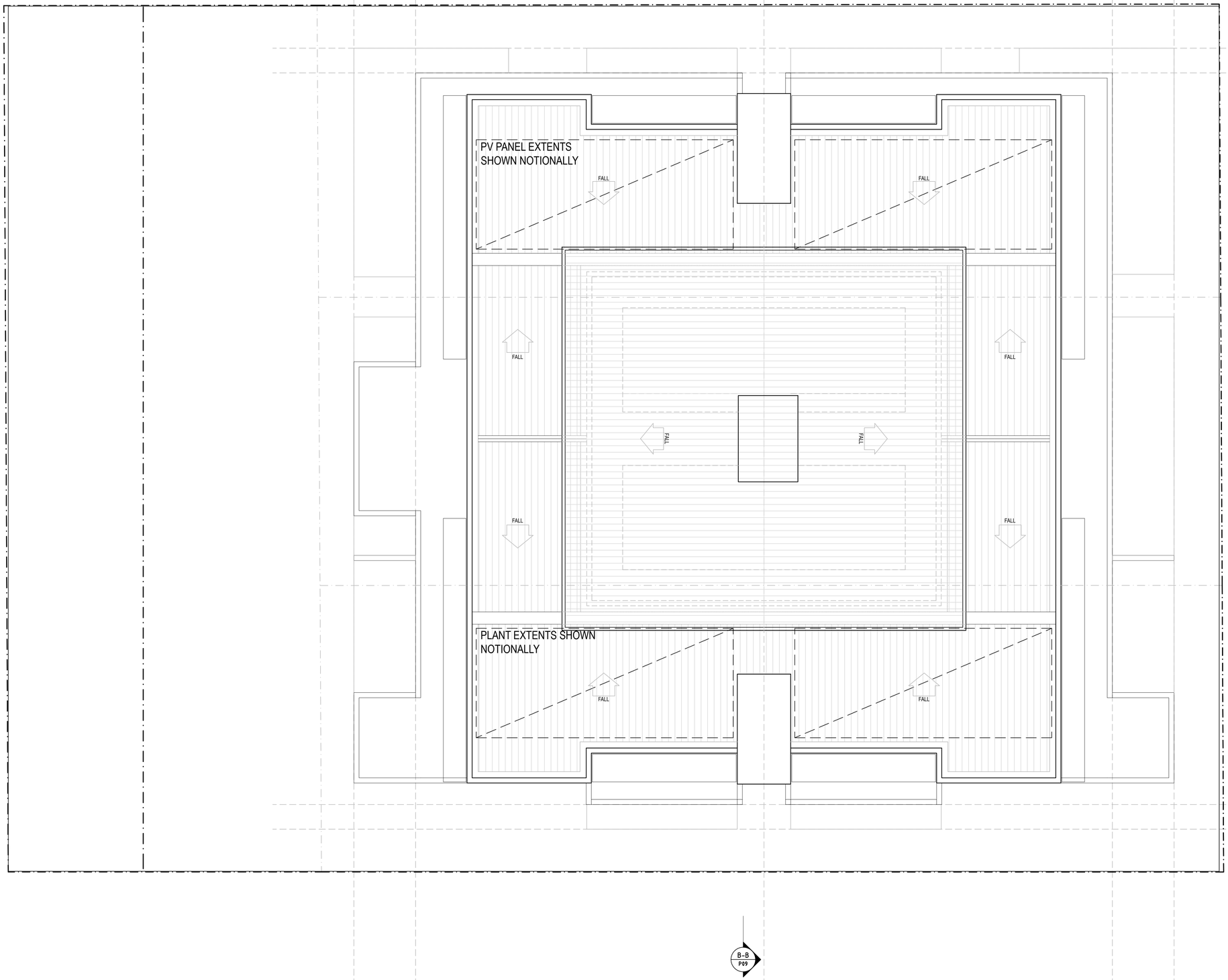
P09
B–B

A–A
P08

A–A
P08




B–B
P09

## ROOF PLAN

1:100 @ A1 1:200 @ A3

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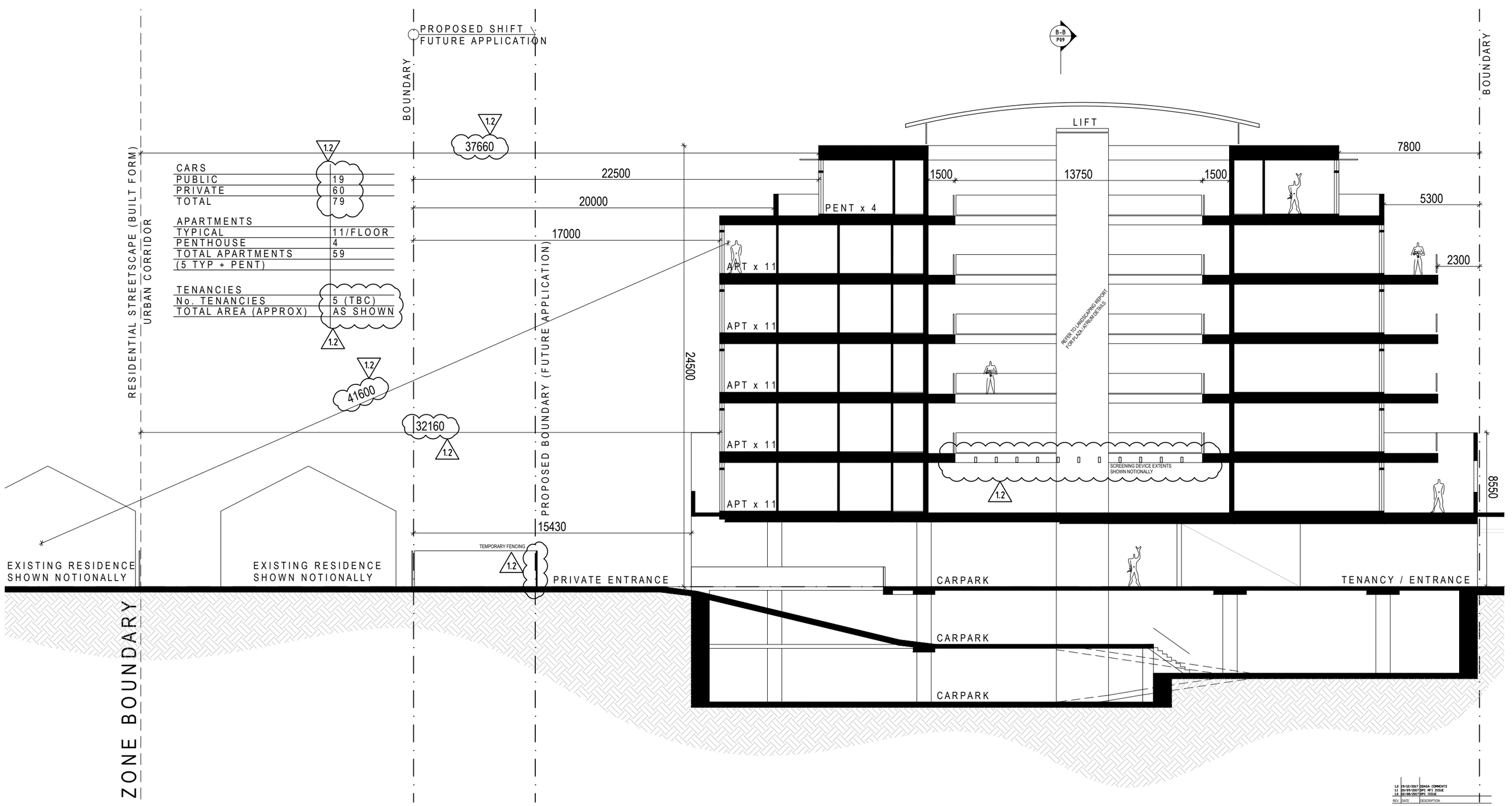


## Principles Addressed

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.2 | 19/12/2017 | DAASA COMMENTS |
| 1.1 | 20/09/2017 | DPC RFI ISSUE |
| 1.0 | 30/08/2017 | DPC ISSUE |

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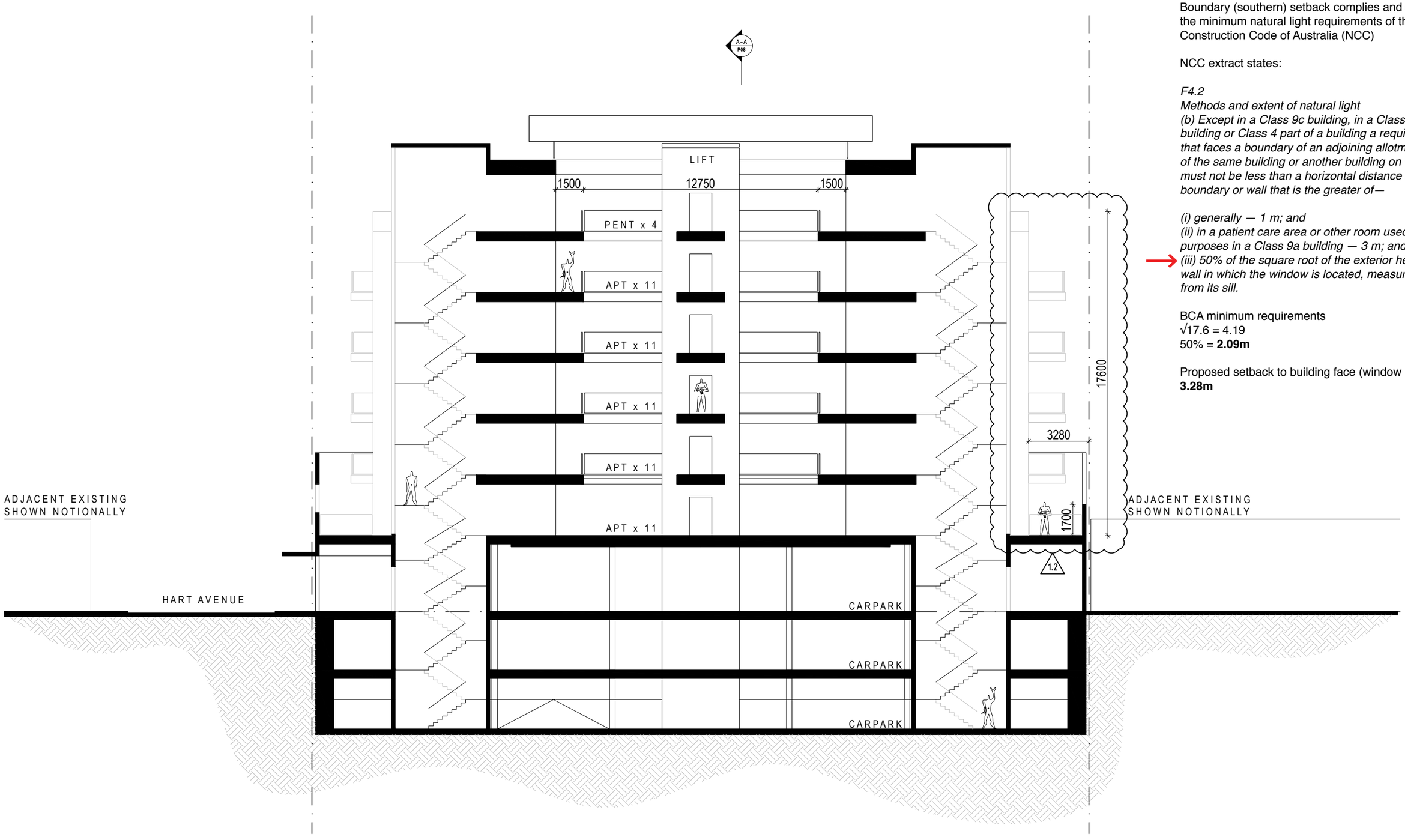


Boundary (southern) setback complies and exceeds the minimum natural light requirements of the National Construction Code of Australia (NCC)

NCC extract states:

*F4.2*
*Methods and extent of natural light*
*(b) Except in a Class 9c building, in a Class 2, 3 or 9 building or Class 4 part of a building a required window that faces a boundary of an adjoining allotment or a wall of the same building or another building on the allotment must not be less than a horizontal distance from that boundary or wall that is the greater of—*

*(i) generally — 1 m; and*
*(ii) in a patient care area or other room used for sleeping purposes in a Class 9a building — 3 m; and*
*(iii) 50% of the square root of the exterior height of the wall in which the window is located, measured in metres from its sill.*

BCA minimum requirements
√17.6 = 4.19
50% = **2.09m**

Proposed setback to building face (window location)
**3.28m**

## Principles Addressed

| REV | DATE | DESCRIPTION |
|---|---|---|
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DRAWING
SECTION

NORTH

SCALE
AS SHOWN

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DWG NO
P09

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|---|---|---|
| 1.2 | FB | mdf |

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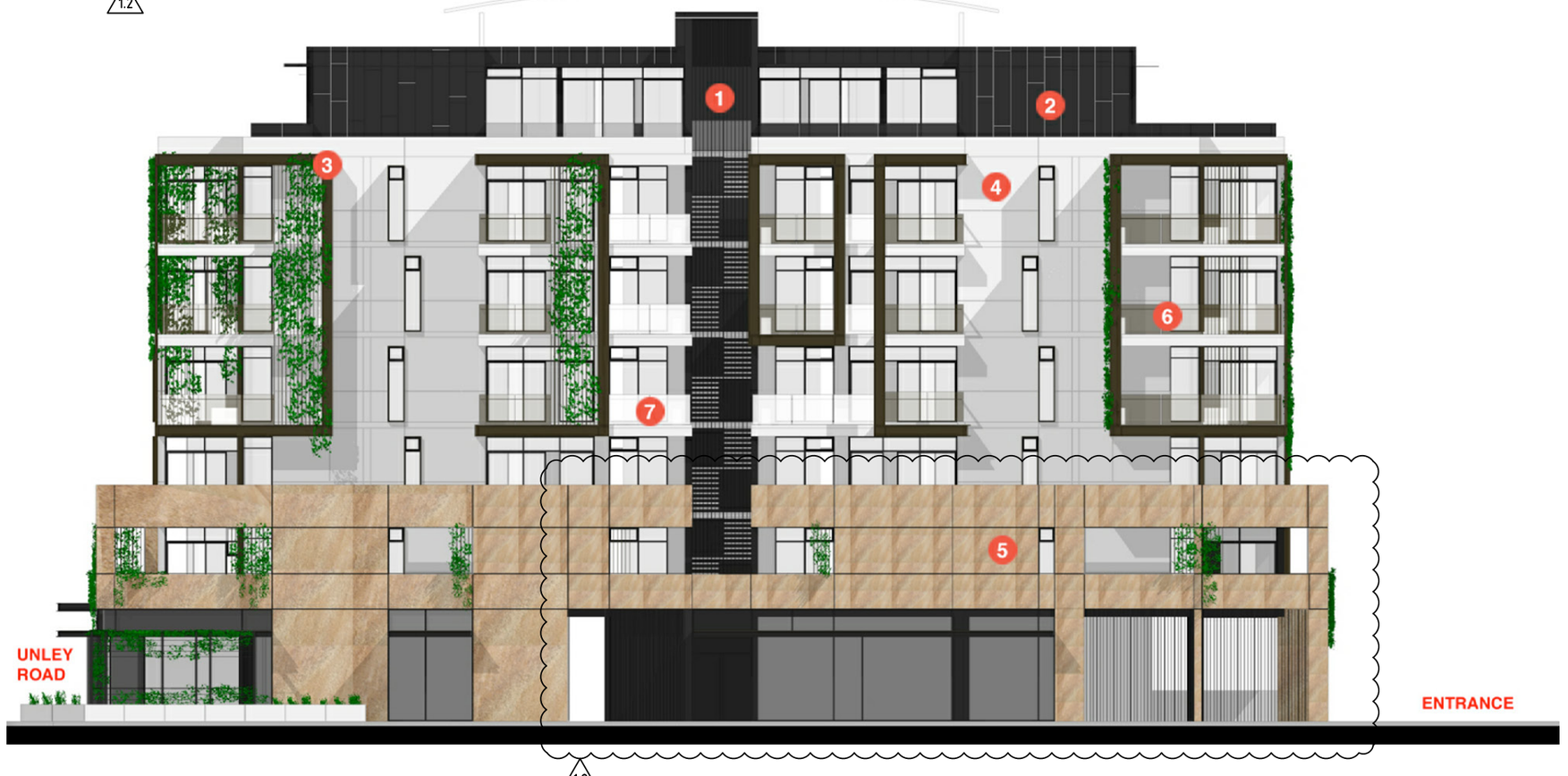


**Principles Addressed**

MATERIALITY LEGEND

1 METAL SCREENING
2 METAL CLADDING
3 STEEL
4 STAINED PRECAST
5 STONEWORK
6 TINTED GLASS
7 CLEAR GLASS

NOTES:
- GREENWALLS / PLANTING AND LANDSCAPING SHOWN CONCEPTUALLY ONLY
- SUBJECT TO DEVELOPMENT - REFER TO LANDSCAPE REPORT FOR DETAIL

| REV | DATE | DESCRIPTION |
|---|---|---|
| 1.2 | 29/12/2017 | DAS4 COMMENTS |
| 1.1 | 05/09/2017 | DPC RFI ISSUE |
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PROJECT
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UNLEY

DRAWING
ELEVATIONS

NORTH

SCALE
AS SHOWN

DATE
DECEMBER 2017

PROJECT NO
27080

DWG NO
P10

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.2 | FB | mdf |

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ELEVATION WEST

1:100 @ A1 1:200 @ A3

ELEVATION SOUTH

1:100 @ A1 1:200 @ A3

MATERIALITY LEGEND

1 METAL SCREENING
2 METAL CLADDING
3 STEEL
4 STAINED PRECAST
5 STONEWORK
6 TINTED GLASS
7 CLEAR GLASS

NOTES:
- GREENWALLS / PLANTING AND LANDSCAPING SHOWN CONCEPTUALLY ONLY
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| 10 | 02/08/2017 | DPC ISSUE |

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UNLEY DEVELOPMENT
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DRAWING
ELEVATIONS

NORTH

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AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P11

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.0 | FB | mdf |

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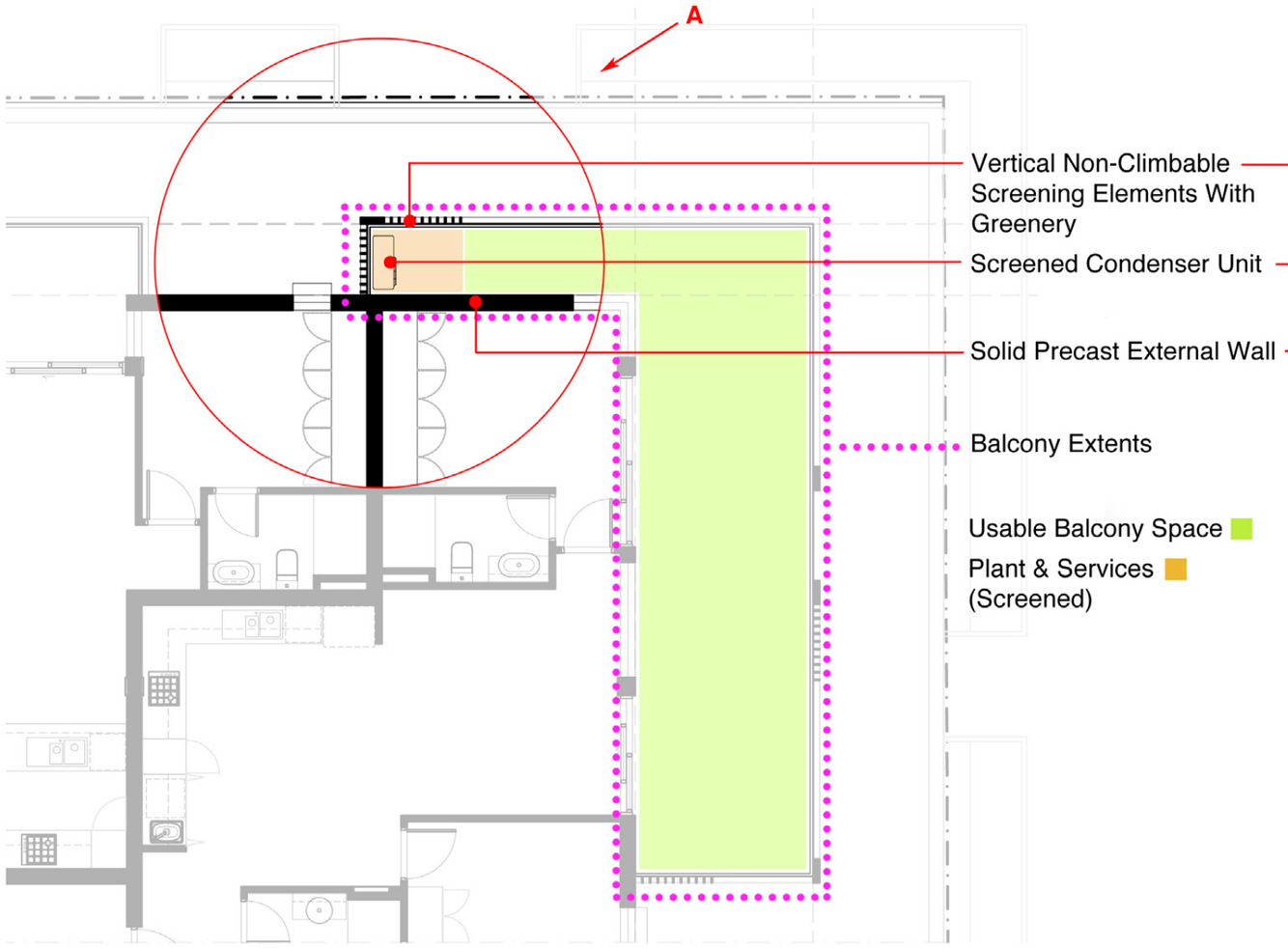
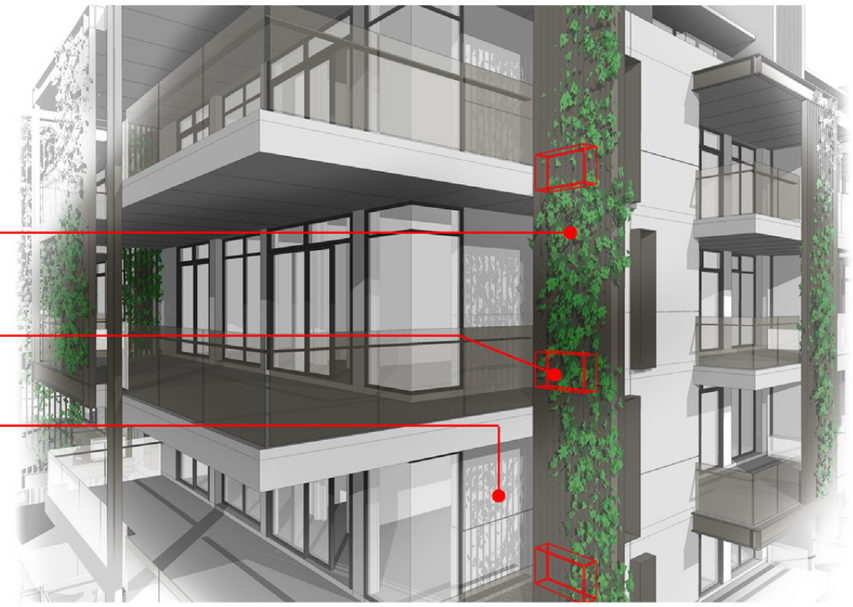
# Plan Detail

## Balcony

### Typical Air Conditioning Condenser Unit Screening Strategy

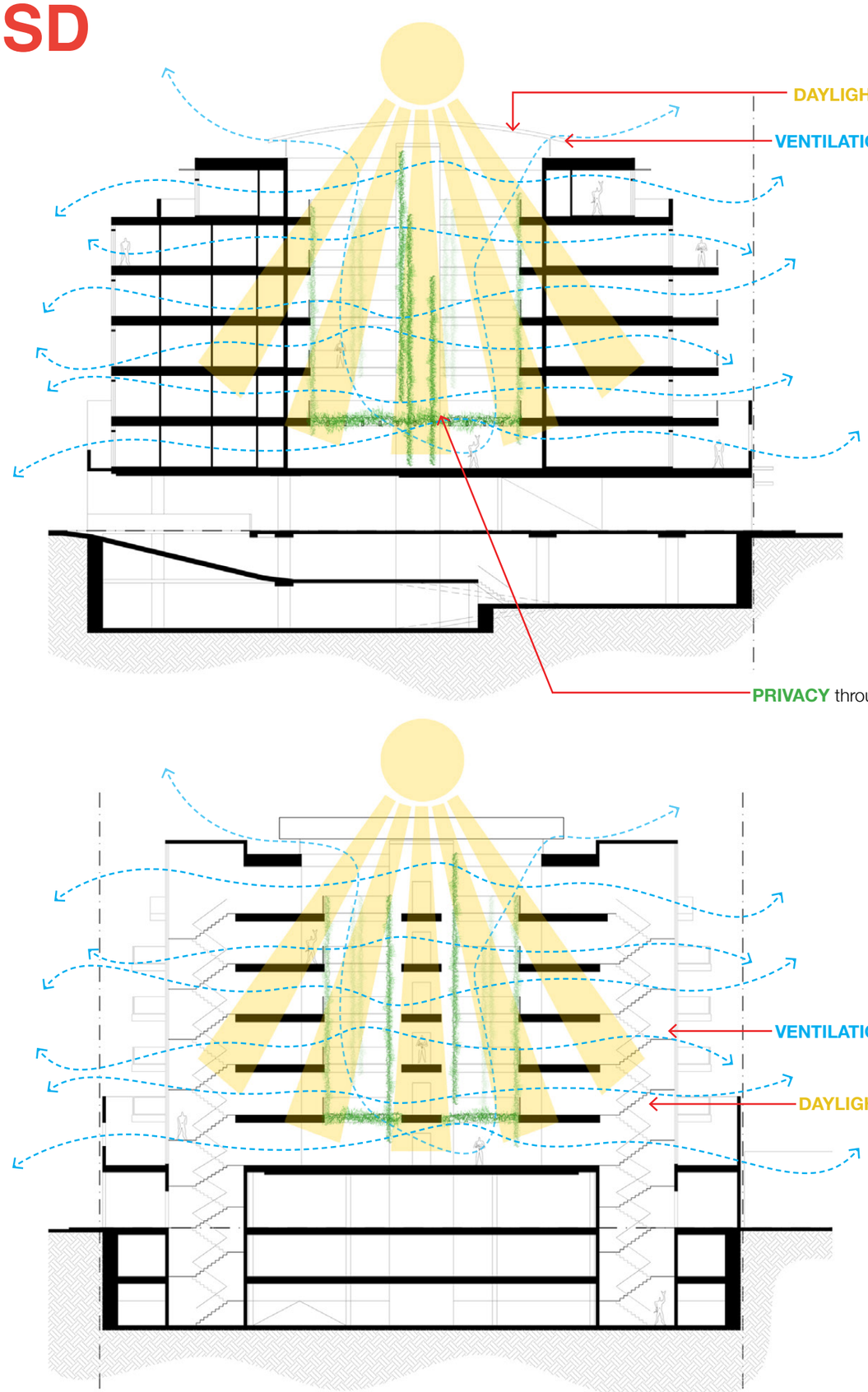


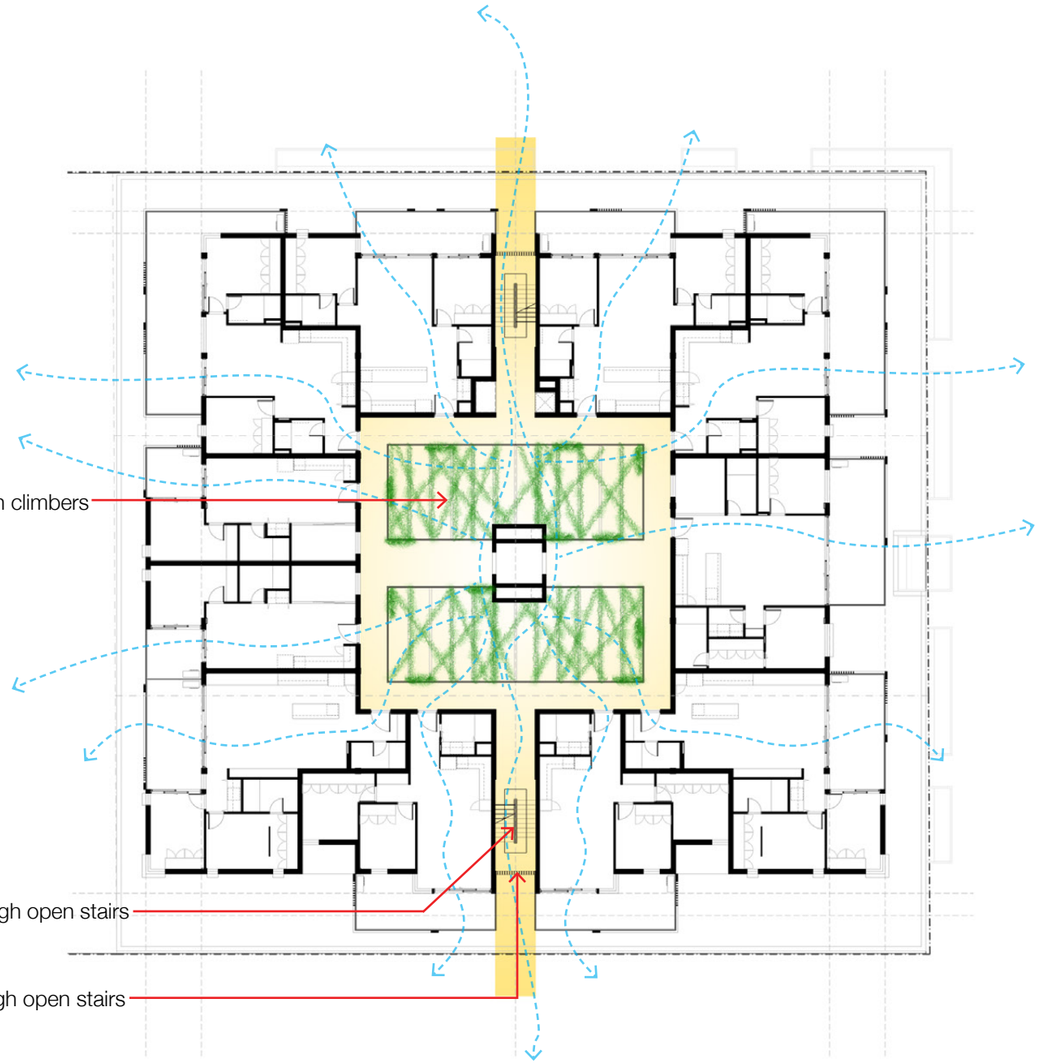



Viewpoint Marked A

# ESD

## Internal Atrium



**Refer also:**

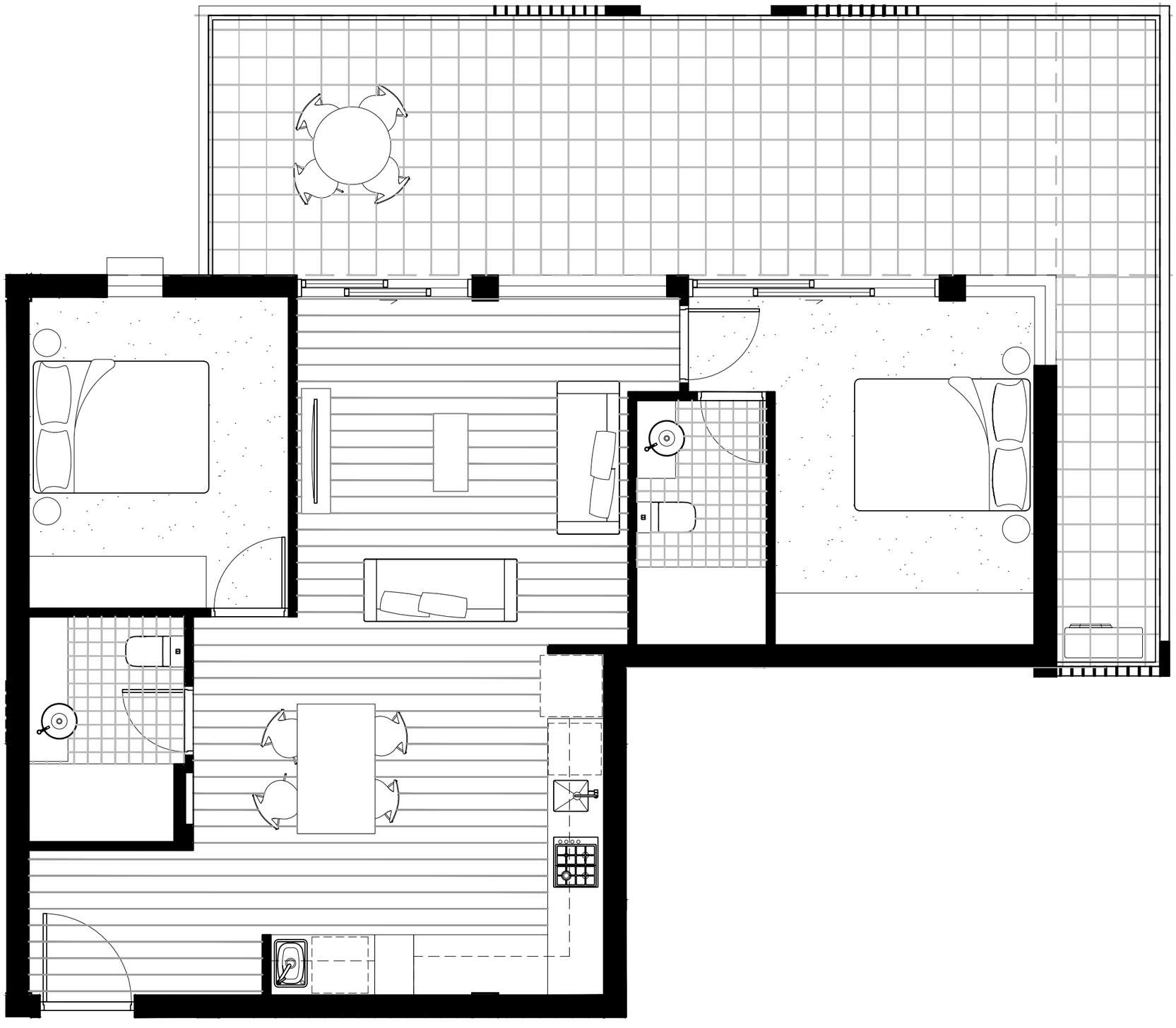
- ESD Report prepared by DSquared
- Concept Report (Landscape) prepared by Hassell

# Design Proposal

## Visualisation

**Perspective**

Unley Road - north east corner



# APARTMENT TYPE 01 2 BED 2 BATH 81m²

v1.0

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. August 2017.

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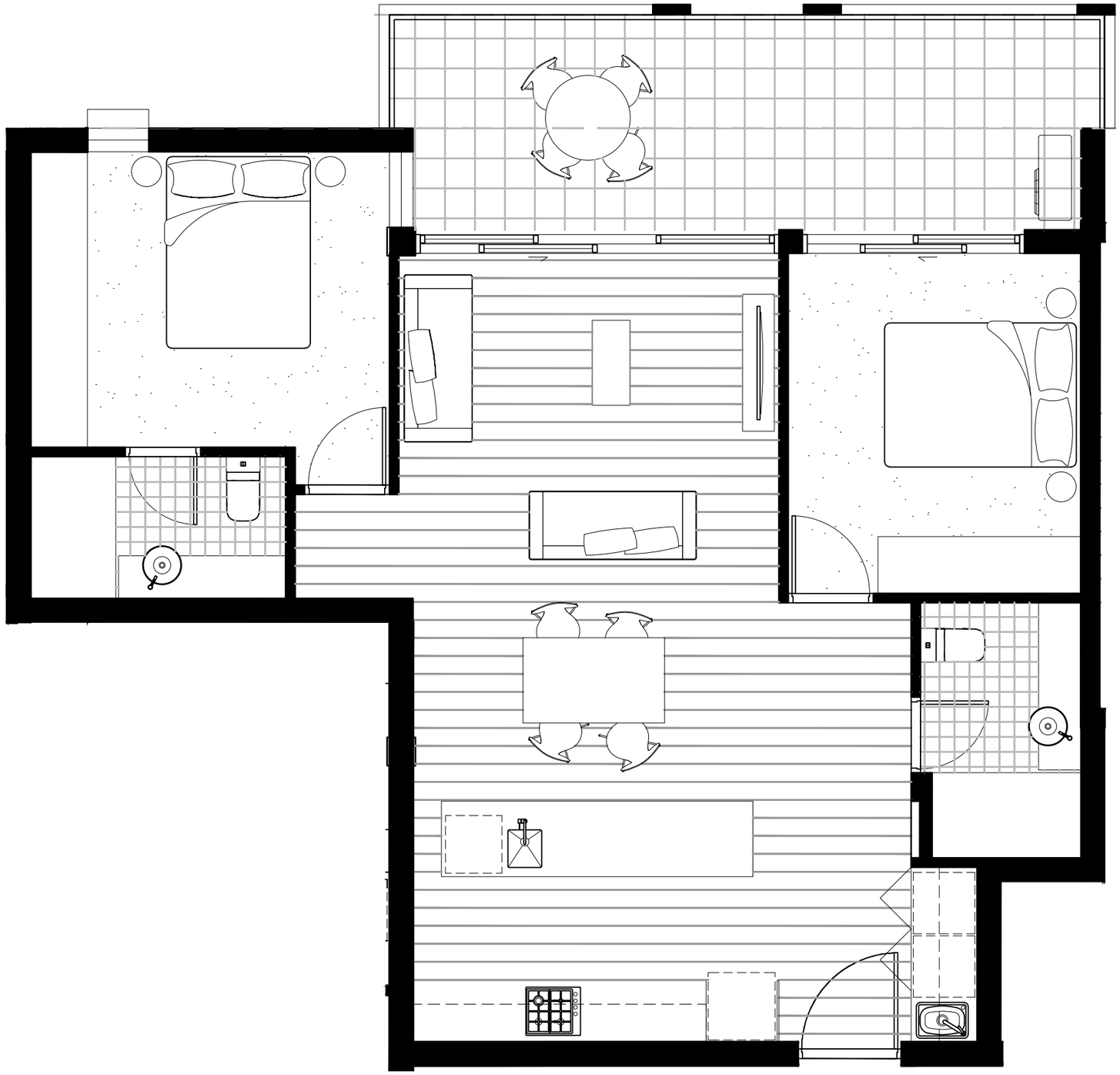

# APARTMENT TYPE 02 2 BED 2 BATH 83m²

v1.0

0 0.5 1.5 3m

Disclaimer: This floor plan was produced prior to completion of construction. Dimensions and areas are approximate. Changes may be made during construction and dimensions, tile setout, areas, fittings, finishes and specifications are subject to change without notice in accordance with the provisions of the Contract of Sale. The furniture, curtains and light fixtures depicted are not included with any sale. August 2017.

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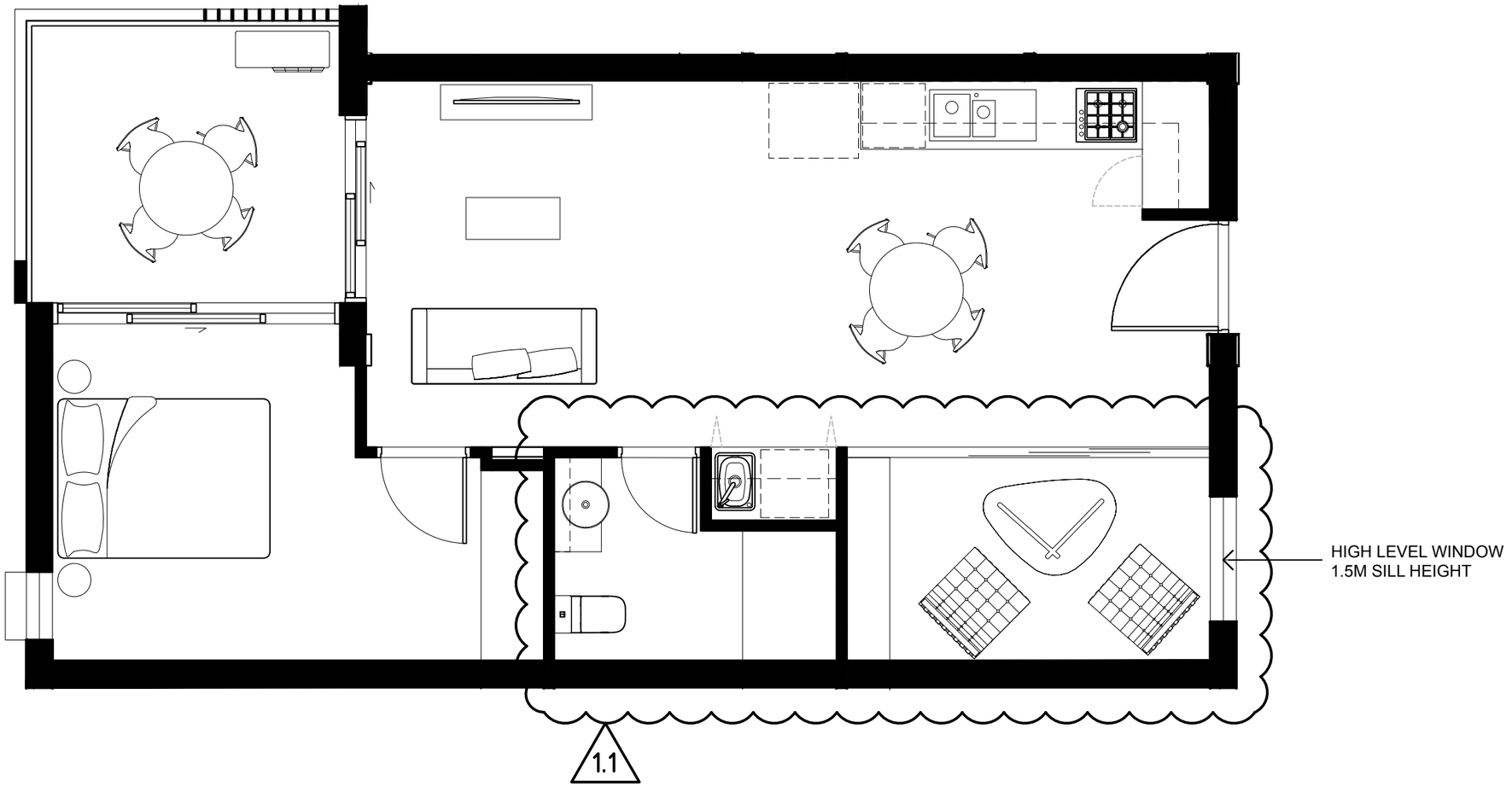


# APARTMENT TYPE 03 1 BED 1 BATH 1 STUDY 60m²

v1.1

0 0.5 1.5 3m

**Principles Addressed**

# APARTMENT TYPE 04 2 BED 2 BATH 1 STUDY 98m²

v1.1

0 0.5 1.5 3m

**Principles Addressed**

# APARTMENT TYPE 05 2 BED 2 BATH 96m²

1:50 @ A3 v1.0

0 0.5 1.5 3m

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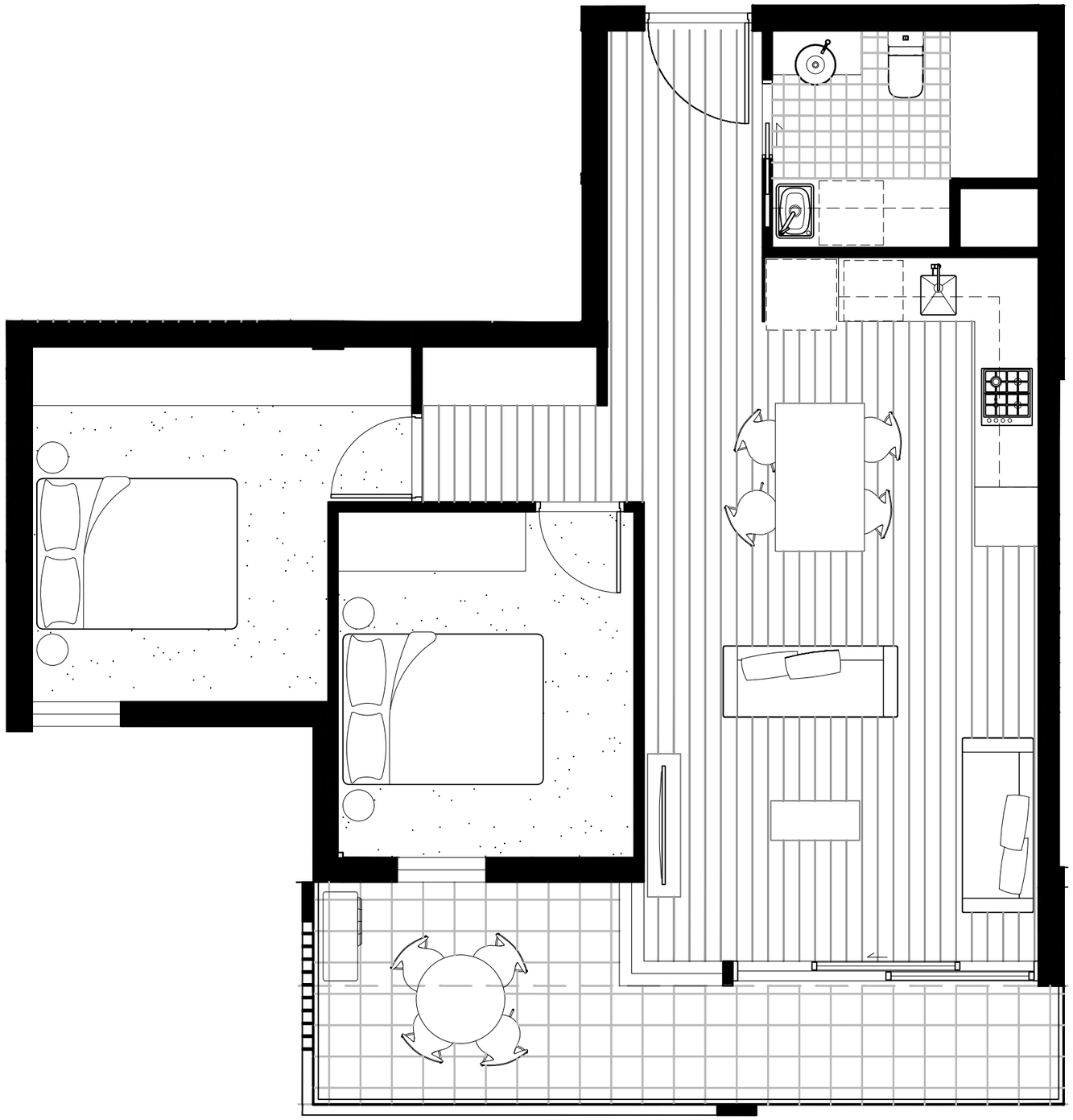

# APARTMENT TYPE 06 2 BED 1 BATH 73m²

1:50 @ A3 v1.0

0 0.5 1.5 3m

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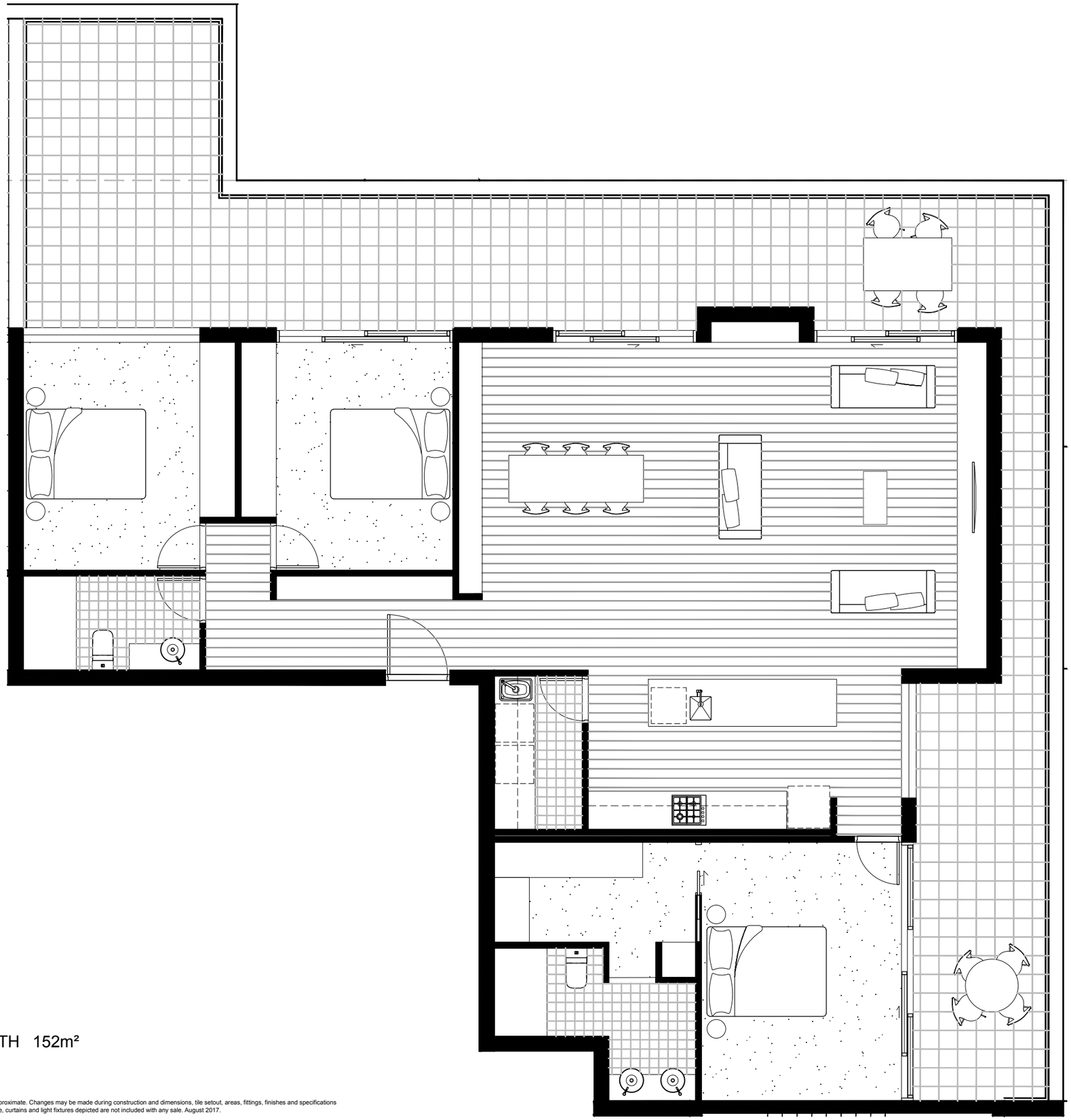

# APARTMENT TYPE 07 3 BED 2 BATH 152m²

1:50 @ A2 v1.0

0 0.5 1.5 3m

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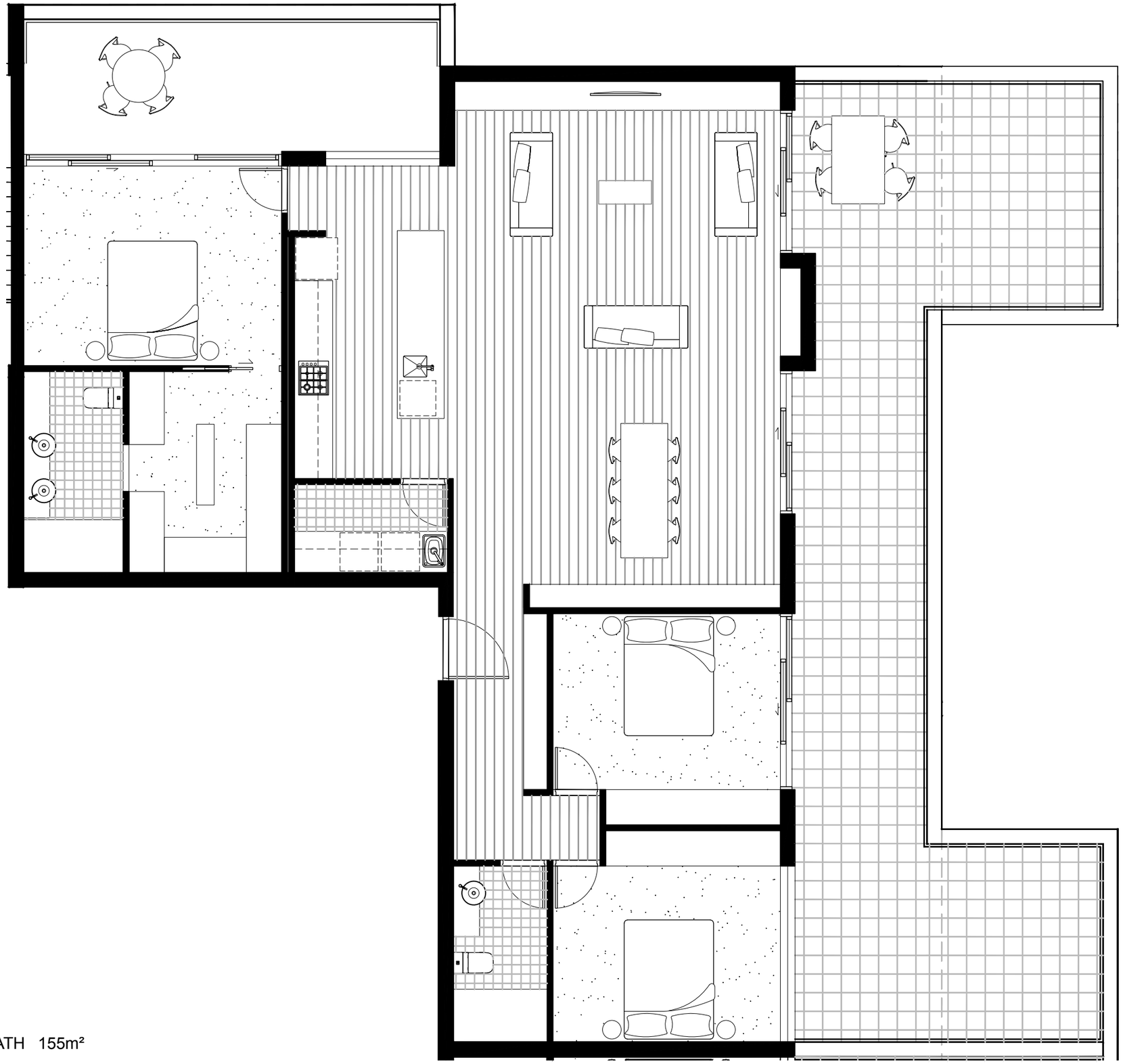

# APARTMENT TYPE 07A 3 BED 2 BATH 155m²

1:50 @ A2 v1.0

0 0.5 1.5 3m

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# Building Matrix

# Building Matrix

## Yield / Area Matrix

**Areas**

Including storage (+ robe) area breakdown.

246 Unley Road Building Matrix

**Tenancies**

| | Net Lettable Area (m²) |
|---|---|
| | Ground |
| Tenancy 1 | 153 |
| Tenancy 2 | 147 |
| Tenancy 3 | 157 |
| Tenancy 4 | 122 |

**Private Apartments**

| | | Net Floor Area (m²) Property Council Guidelines | | | | | | | | | Balconies (m²) | | | | | | | | Gross Floor Area (m²) Property Council Guidelines |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Apartments | TYPE 01 | TYPE 02 | TYPE 03 | TYPE 04 | TYPE 05 | TYPE 06 | TYPE 07 | TYPE 07A | Circulation (m²) | TYPE 01 | TYPE 02 | TYPE 03 | TYPE 04 | TYPE 05 | TYPE 06 | TYPE 07 | TYPE 07A | |
| | | 81 | 86 | 60 | 98 | 96 | 73 | 152 | 155 | | 39 | 16 | 7 | 24 | 20 | 12 | 60-70 | 48-58 | |
| Ground | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 96 (lobby / core only) | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| First Level (Terrace) | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 296 | 2 (77-86) | 2 (41) | 2 (15) | 1 (52) | 2 (72-81) | 2 (40) | 0 | 0 | 1830 |
| Second Level | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 161 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 1274 |
| Third Level | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 161 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 1274 |
| Fourth Level | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 161 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 1274 |
| Fifth Level | 11 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 161 | 2 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 1274 |
| Sixth Level | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 161 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 1094 |
| Total | 59 | | | | | | | | | 1197 | | | | | | | | | |

| | Bed 1 | Bed 2 | Bed 3 | Bathroom 1 | Bathroom 2 | Separate Laundry | Storage x + robe (m³) |
|---|---|---|---|---|---|---|---|
| TYPE 01 | ✓ | ✓ | - | ✓ | ✓ | - | 7.2 + 8 |
| TYPE 02 | ✓ | ✓ | - | ✓ | ✓ | ✓ | 7 + 8.3 |
| TYPE 03 | ✓ | - | - | ✓ | - | ✓ | 6 + 3 |
| TYPE 04 | ✓ | ✓ | - | ✓ | ✓ | ✓ | 7.4 + 9.6 |
| TYPE 05 | ✓ | ✓ | - | ✓ | ✓ | ✓ | 8.5 + 8 |
| TYPE 06 | ✓ | ✓ | - | ✓ | ✓ | - | 7.4 + 9.2 |
| TYPE 07 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 10 + 18 |
| TYPE 07A | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | 10 + 22.4 |

# Development Team

# Team

## Development Team

**Tectvs with Catcorp with Future Urban Group**

Combining decades of inner city mixed-use development experience with commercial development expertise

- Catcorp: Developer
- Tectvs: Architects
- Future Urban Group: Planner
- Hassell: Landscaping
- Rawtec: Waste
- Phil Weaver: Traffic
- DSquared: ESD & Sustainability
- Resonate: Acoustics
- Lucid Consulting: Building Services
- Structural Systems: Civil / Structural

Think beyond the square.

Architecture
Interior Design
Landscape Architecture
Planning
Urban Design

Australia
China
Hong Kong
Singapore
United Kingdom
United States of America

# 246 UNLEY ROAD CONCEPT DESIGN

## Landscape Architecture

Prepared for Commercial and General
July 2017

HASSELL

01
**Introduction**

**Page 3**

02
**Street Presence**

**Page 4-6**
Spatial Framework
Landscape Concept
Precedent Imagery
Facade Greening

03
**Green Void**

**Page 7**
Spatial Framework
Concept Section
Precedent Imagery

04
**Communal Courtyard**

**Page 8-9**
Landscape Concept
Precedent Imagery
Spatial Framework


Front cover image: Landscape Concept Plan
Image Source: HASSELL


**Contact**
Nick Pearson Senior Associate
npearson@hassellstudio.com

HASSELL
Level 1, 82 Waymouth Street
Adelaide SA
Australia 5000
T +61 4 8220 5000
hassellstudio.com
@HASSELL_Studio
HASSELL Limited
24 007 711 435


**Document control**

| Rev | Date | Approved by | Description |
|---|---|---|---|
| 01 | 5th July 2017 | Nick Pearson | Client Issue |

# 01 Introduction

**Design Statement**

Located just south of the Unley Central Precinct, the development has its primary street frontage with Unley Road and the northern side of Hart Avenue.

This section of Unley Road is predominantly commercial premises with minimal setbacks and awnings. The narrow footpath widths and awning presence results in no street trees, although south and north of the development trees are present, where building frontages have an increased set back from the road corridor.

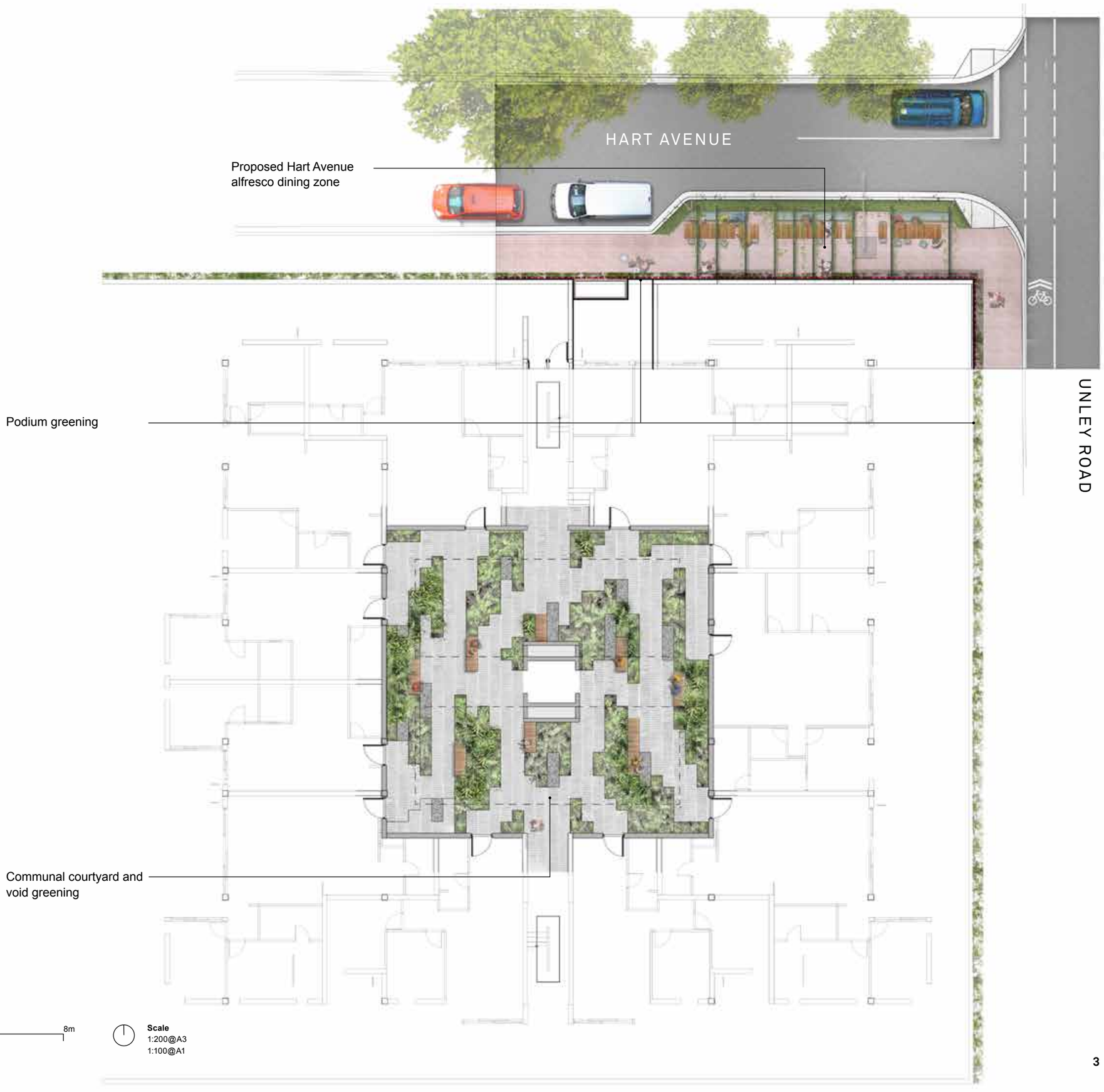
**Facade Greening**
With limited opportunity for street trees to the development frontage onto Unley Road, the approach is to link the existing street tree canopies north and south of the development through the use of facade greening to the horizontal podium mass.

Additional green filigree provided to vertical screens on the tower facade assist with softening the development's mass and presence within the Unley Road streetscape.

**Hart Avenue Street presence**
With minimal footpath width to the development frontage on Unley Road, an opportunity has been identified to enable the development to actively engage with the streetscape, creating a vibrant cosmopolitan dining experience which enhances the street life around the development.

Adjustments to side street parking would be required to facilitate the protuberance, to create sufficient space for the proposed outdoor dining area. This design move would be subject to further discussions and agreements with City of Unley.

**Communal Courtyard and Void Greening**
A communal green courtyard space is provided for residents within a 5 level void. A verdant garden setting provides intimate moments for relaxation and contemplation, small group gatherings and is provided as an extension of the residents' backyard. The void is greened through balcony edge planting and vertical trellis climbers creating an attractive outlook and arrival experience for guests and residents.





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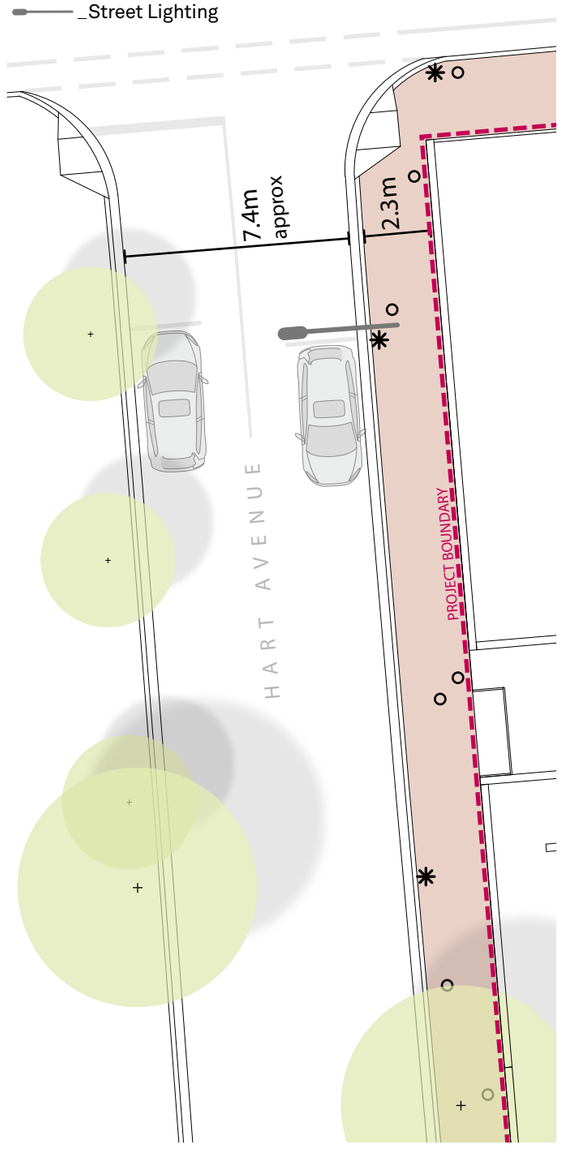
# 02 Street Presence
## Spatial Framework

### Existing

The corner vantage offers an under utilised opportunity for street presence with an a-symmetrical regular tree planting on the northern side and key views into the building ground floor.

_Street tree planting (*Lophostemon confertus*)
_Clay paving
_Services and Infrastructure
_Street Lighting




### Proposed Alignment and Greening

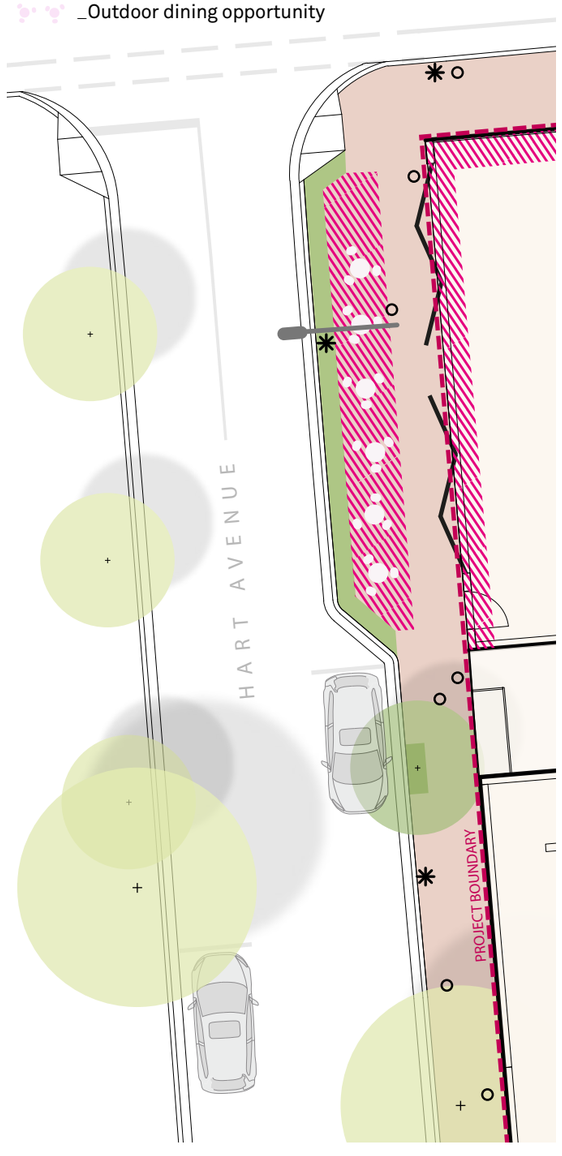
The corner vantage offers an under utilised opportunity for street presence with key views into the building ground floor. Pushing out the kerb provides opportunity for outdoor dining experiences

_Proposed Street tree planting, to match existing
_Clay paving, to match existing
_Services and Infrastructure, relocated to suit kerb
_Overhead portal structures for greening above
_Planters framing corner

### Activation and Flexibility

*"To provide social and cultural dining experiences and create a cosmopolitan ambiance and enhance street life"*
*City of Unley Outdoor Dining Policy*

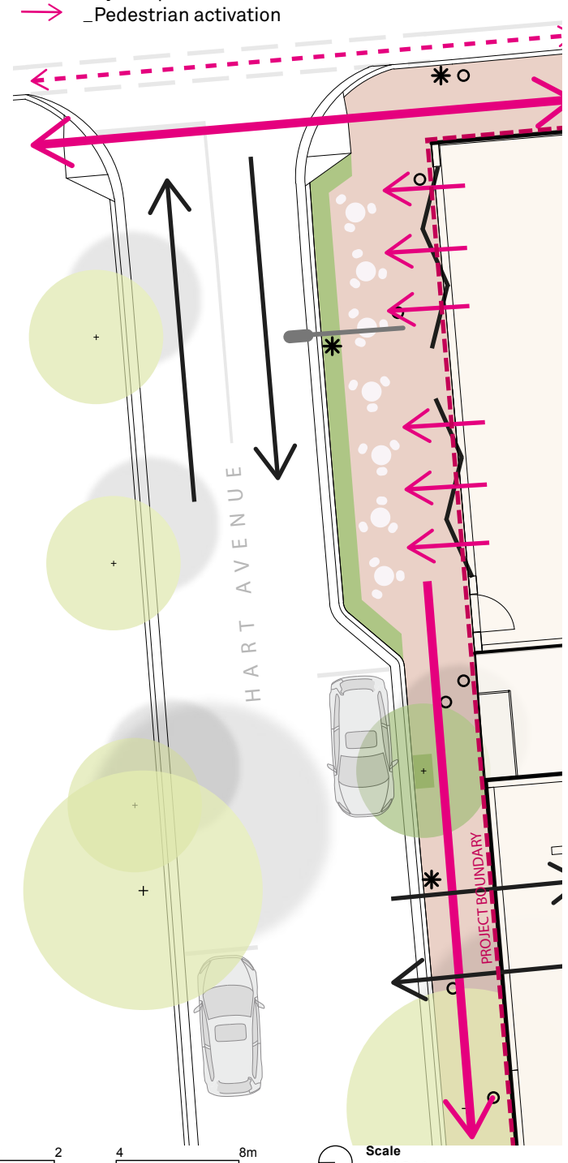
_Activated zones and building edges
_Operable and flexible edge to architecture
_Outdoor dining opportunity




### Access and Circulation

Maintaining key pedestrian, cyclist and vehicular circulation around the development, pushing out the kerb allows for additional outward activation with people moving from within the building to the outside dining area. Adjustments to vehicle on street parking will be required to maintain two way side street access allowing for the protuberance.

_Vehicular movement
_Major pedestrian circulation
_Cyclist path
_Pedestrian activation

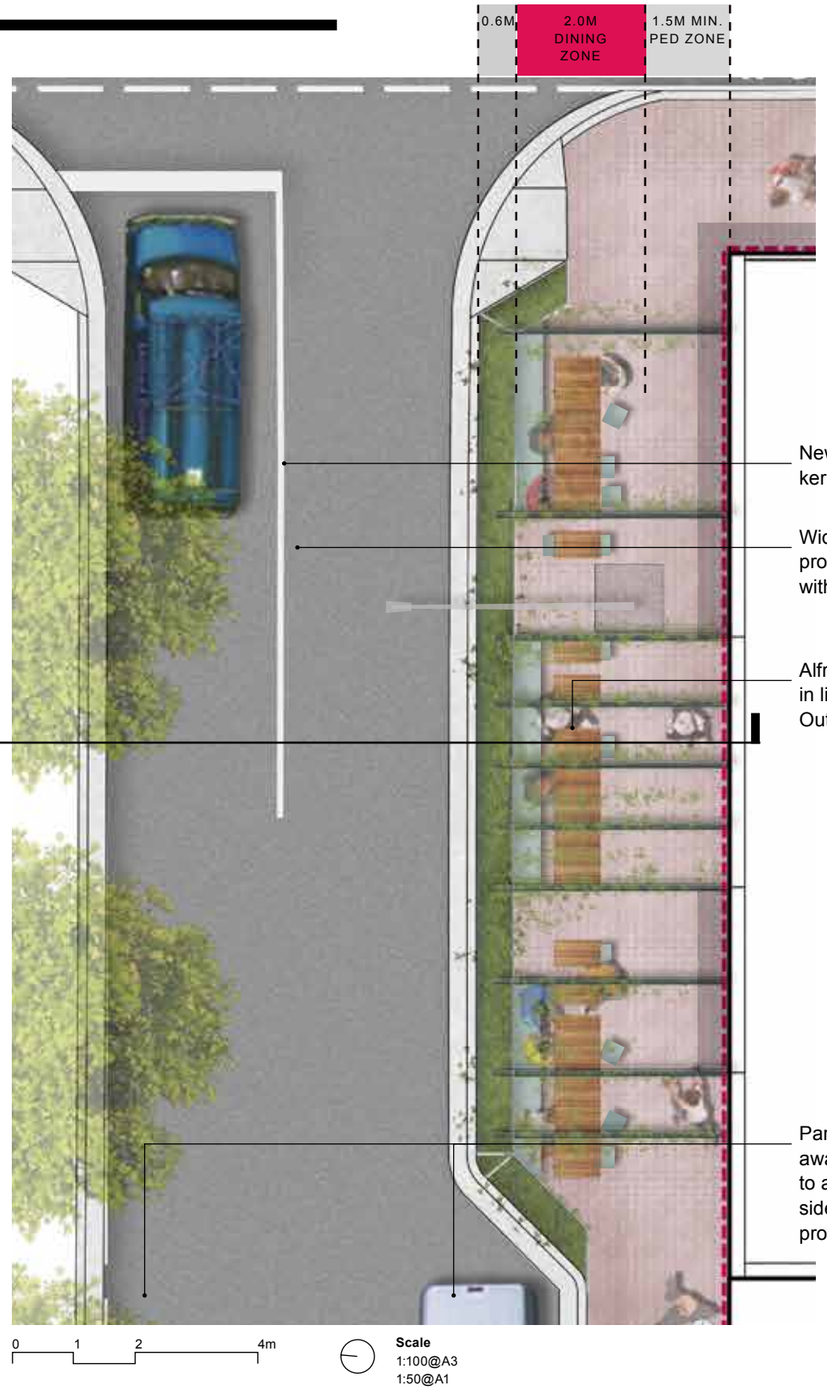



0 2 4 8m

Scale
1:200@A3
1:100@A1

# 02 Street Presence
Landscape Concept

## Detail Plan




## Detail Section

Medium, evergreen tree to tie in with existing
Lophostemon confertus - Brush Box

Raised planters with Understorey planting
To provide street presence and act as vehicular deterrents. Materiality to match architecture

Traditional format Clay paving
To match and tie in with existing

Outdoor dining and activation
*To align with City of Unley Outdoor Dining Policy

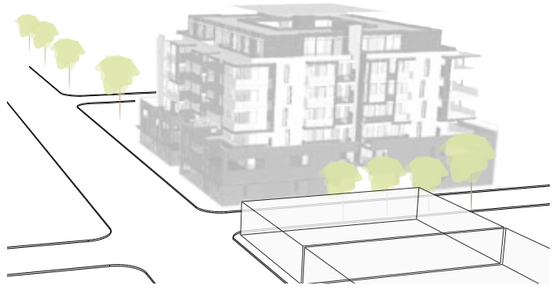
Overhead arbor greening
To provide street presence, shade and amenity

Arbor climbing planting
Sun Parasol - White

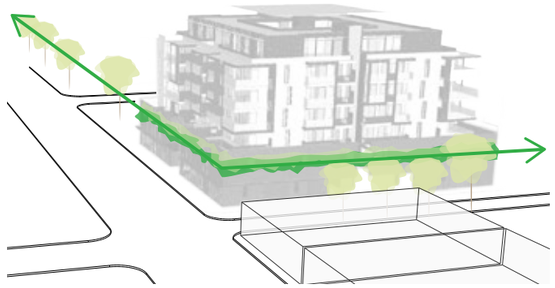
HASSELL
© 2017

## 02 Street Presence
Facade Greening

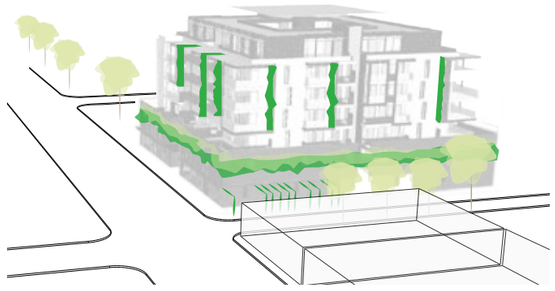
**Existing**



**Linking canopies**



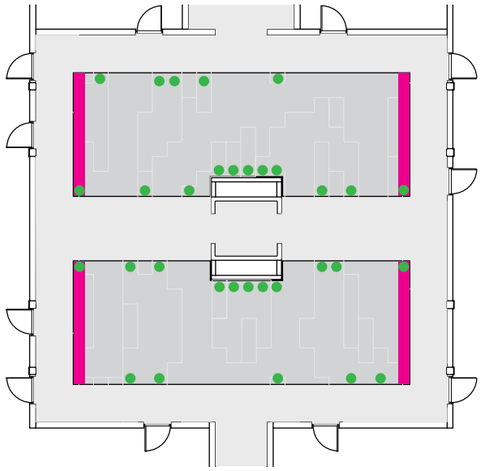
**Added green filigree**



# 03 Green Void
Landscape Concept

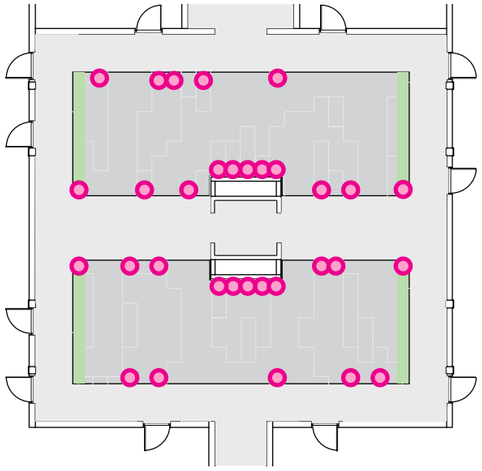
## Balcony green curtains

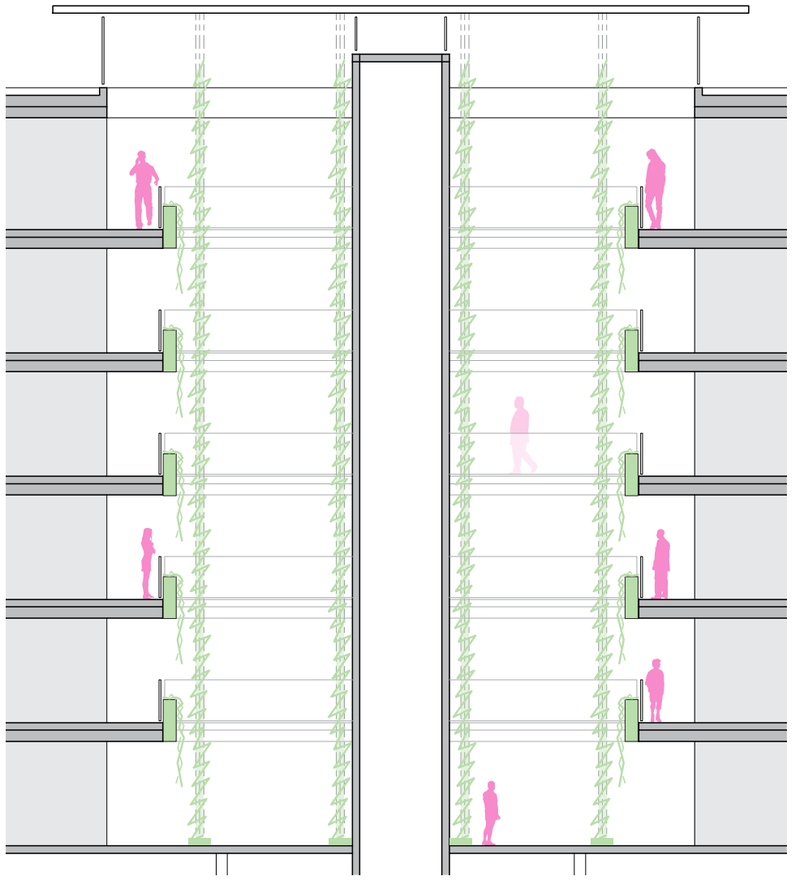
Planters on each level with planting cascading down over the edge  to create a curtain of filtered light. Expressed boldly along the walls that face the lift exit to create a dramatic effect as you exit the lift and move through the central void space.



## Vertical green columns

Vertical columns reaching from the lobby space up through the central void, creates an immersive experience. Layout  of columns responds to the communal courtyard creating shifting filtered light within the void and amplifies the verticality of the space.





## Plant palette

Syngonium
'White Butterfly'

Piper betle

Adiantum sp.

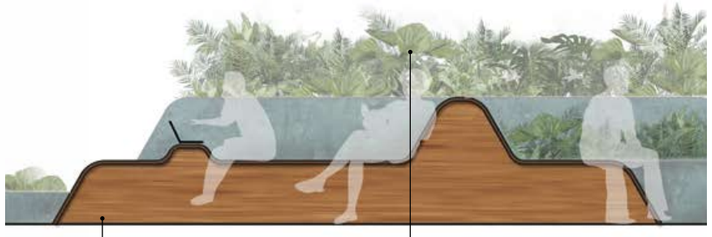
Epipremnum
aureus

© 2017

## 04 Communal Courtyard
Landscape Concept

**Detail Plan**

**Typical Seat Detail**



Soft timber ribbons fold up and down to provide seating, sun lounges and small tables for coffee or laptop to sit

Planting of varying levels provide a sense of enclosure and intimacy for the communal spaces

**Plant palette**

Philodendron 'Xanadu'

Trachelospermum asiaticum

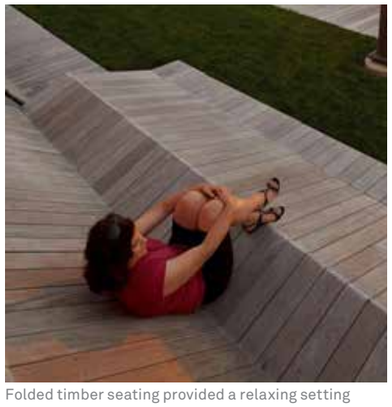
Asplenium nidus

Soleirolia soleirolii

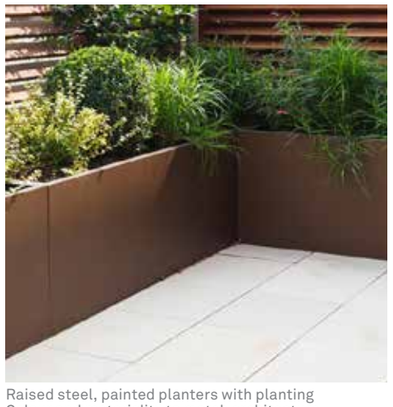
Bamboo sp.

Zamia furfuracea

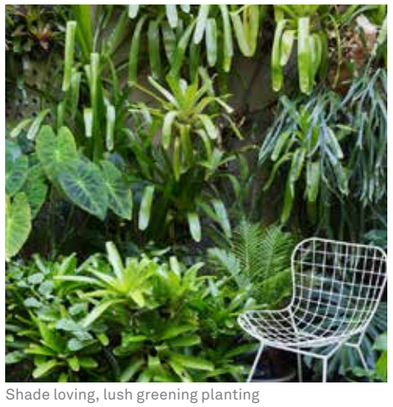
Linear language within courtyard with folded timber seating elements providing tables, seats and lounges



Folded timber seating provided a relaxing setting



Raised steel, painted planters with planting
Colour and materiality to match architecture
Height varies between 225mm, 450mm & 900mm



Shade loving, lush greening planting

Natural stone linear paving (150mm x 600mm bands) with feature gravel bands

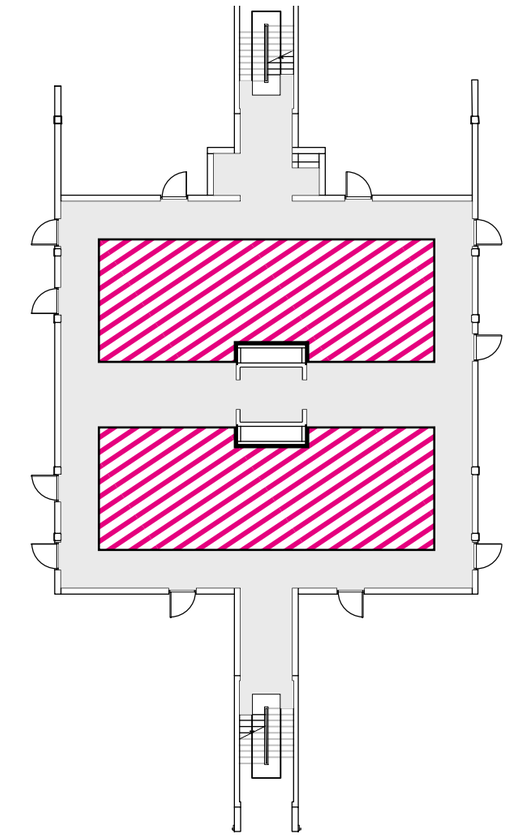
Bamboo species to provide height and provide sense of enclosure to the communal areas

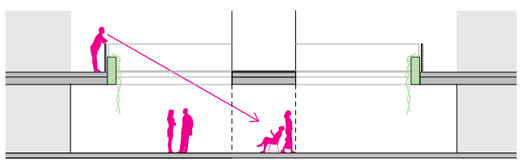
# 04 Communal Courtyard
Spatial Framework

## View from above and Vertical Volume

A sense of enclosure is provided with the vertical volume of surrounding levels for those within the courtyard. The walkways above provide viewing points to appreciate the communal courtyard and offer opportunity to exploit it as a beautiful viewing experience.

_Edge of walkways above
_Open void area visible from above

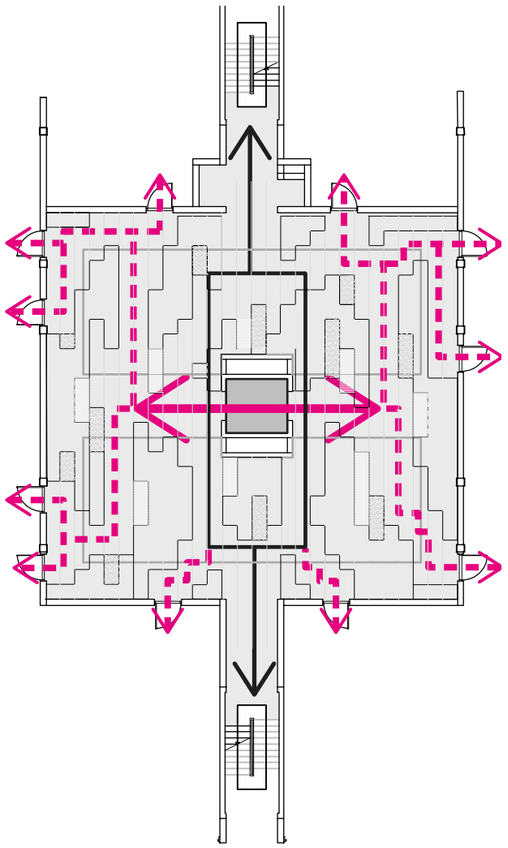




## Access and Circulation

A clear central access from the lift circulates through the communal seating area before teeing off to grouped private entry routes. The emergency egress route circulates around the central core with linking pathways.

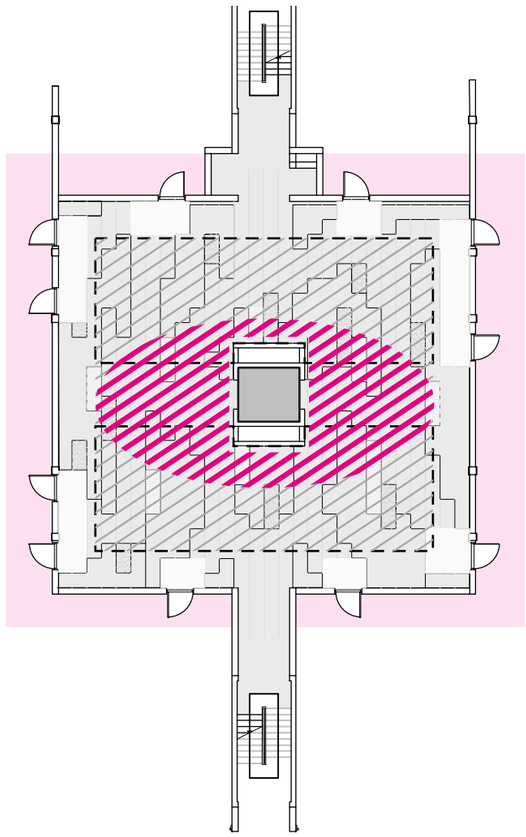
_Major circulation from lift core
_Shared private entry routes
_Emergency egress



## Privacy Zoning

Garden beds located around the perimeter and bordering entry zones to doors provide sense of privacy by screening whilst also providing a sense of green enclosure to the communal areas.

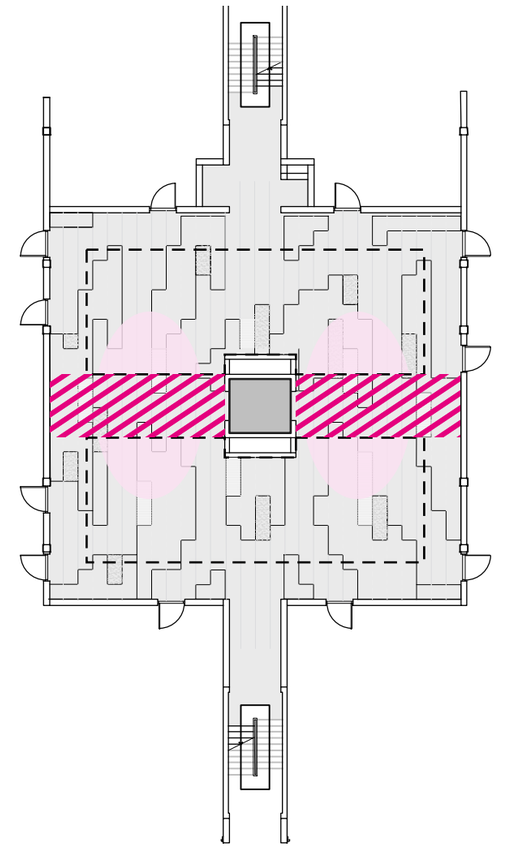
_Private zones (within building)
_Semi-private entry zones
_Semi-communal areas
_Communal zone
_Line of central void above

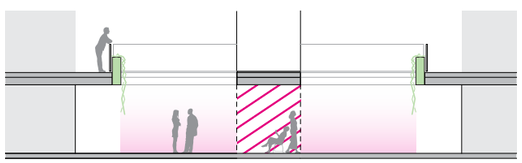


## Communal Intimacy and Privacy

Communal areas located beneath the central walkway have a ‘ceiling’ to the landscape which provides a level of intimacy and privacy.

_Zone underneath central walkway
_Communal areas in open air
_Line of central void above



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**Australia**

**Adelaide**
HASSELL
Level 1
82 Waymouth Street
Adelaide SA
Australia 5000
T +61 8 8220 5000
E adelaide@hassellstudio.com

**Brisbane**
HASSELL
36 Warry Street
Fortitude Valley QLD
Australia 4006
T +61 7 3914 4000
E brisbane@hassellstudio.com

**Melbourne**
HASSELL
61 Little Collins Street
Melbourne VIC
Australia 3000
T +61 3 8102 3000
E melbourne@hassellstudio.com

**Perth**
HASSELL
Level 1
Commonwealth Bank Building
242 Murray Street
Perth WA
Australia 6000
T +61 8 6477 6000
E perth@hassellstudio.com

**Sydney**
HASSELL
Level 2
Pier 8/9, 23 Hickson Road
Sydney NSW
Australia 2000
T +61 2 9101 2000
E sydney@hassellstudio.com

**China**

**Beijing**
HASSELL
Suite 308-B011 Building A
Beijing Fortune Centre
7 Middle Dong San Huan Road
Chaoyang District
Beijing 100026 China
T +8610 5126 6908
E beijing@hassellstudio.com

**Hong Kong**
HASSELL
22F, 169 Electric Road
North Point Hong Kong
T +852 2552 9098
E hongkong@hassellstudio.com

**Shanghai**
HASSELL
12F base 45 Caoxi North Road
Xuhui District
Shanghai 200030 China
T +8621 5467 9333
E shanghai@hassellstudio.com

**South East Asia**

**Singapore**
HASSELL
33 Tras Street #02-01
078973 Singapore
T +65 6224 4688
E singapore@hassellstudio.com

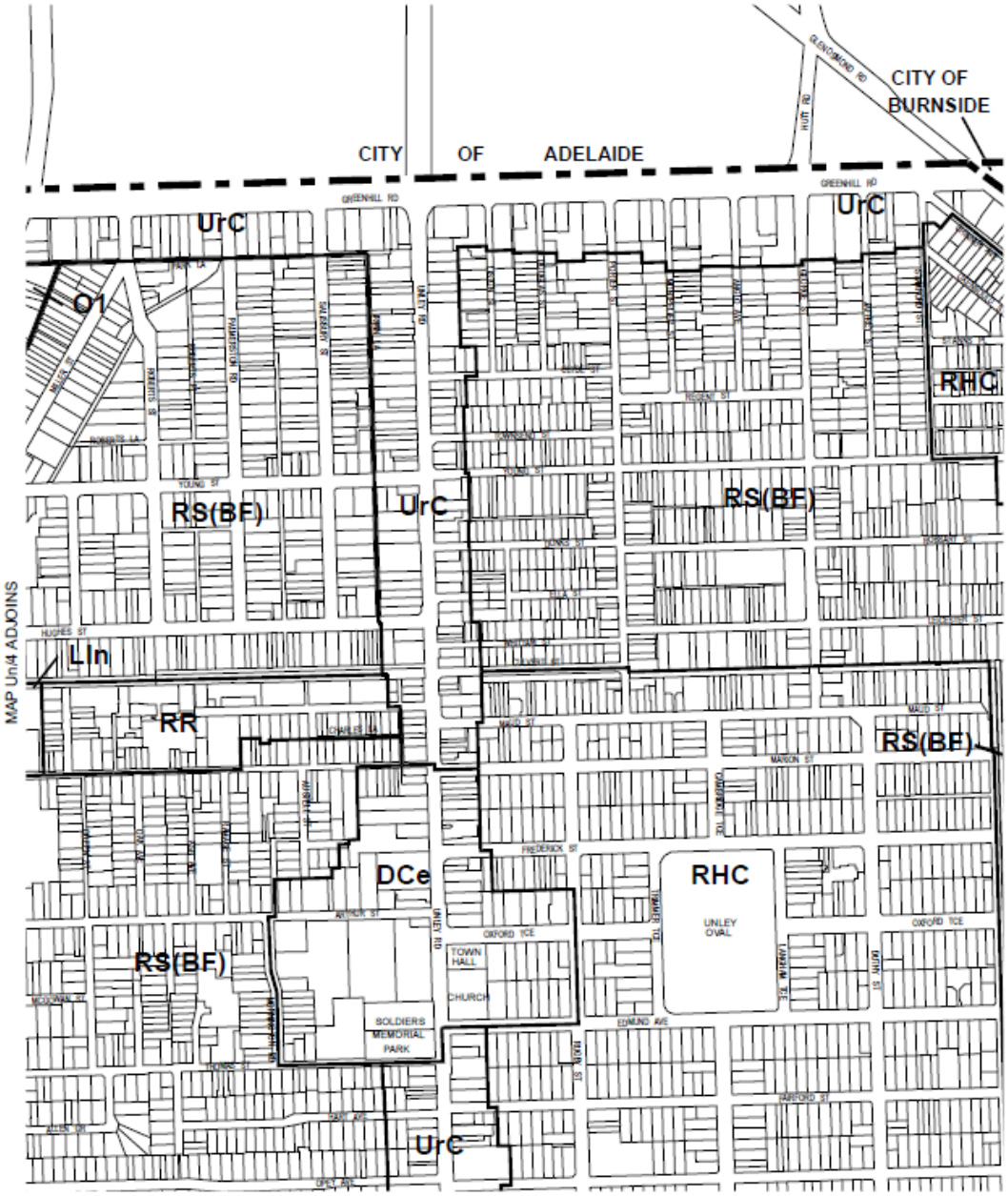
**United Kingdom**

**Cardiff**
HASSELL
Level 2 Park House
Greyfriars Road
Cardiff CF10 3AF United Kingdom
T +44 29 2072 9071
E cardiff@hassellstudio.com

**London**
HASSELL
1 Curtain Place
London EC2A 3AN United Kingdom
T +44 20 7490 7669
E london@hassellstudio.com

**United States of America**

**San Francisco**
HASSELL
Level 7
25 Taylor Street
San Francisco CA 94102
United States of America
T +1 415 860 7067
E sanfrancisco@hassellstudio.com




Note: For Policy Areas See Map Un/14

| | |
|---|---|
| DCe | District Centre |
| LIn | Light Industry |
| O1 | Office 1 |
| RHC | Residential Historic Conservation |
| RR | Residential Regeneration |
| RS(BF) | Residential Streetscape (Built Form) |
| UrC | Urban Corridor |

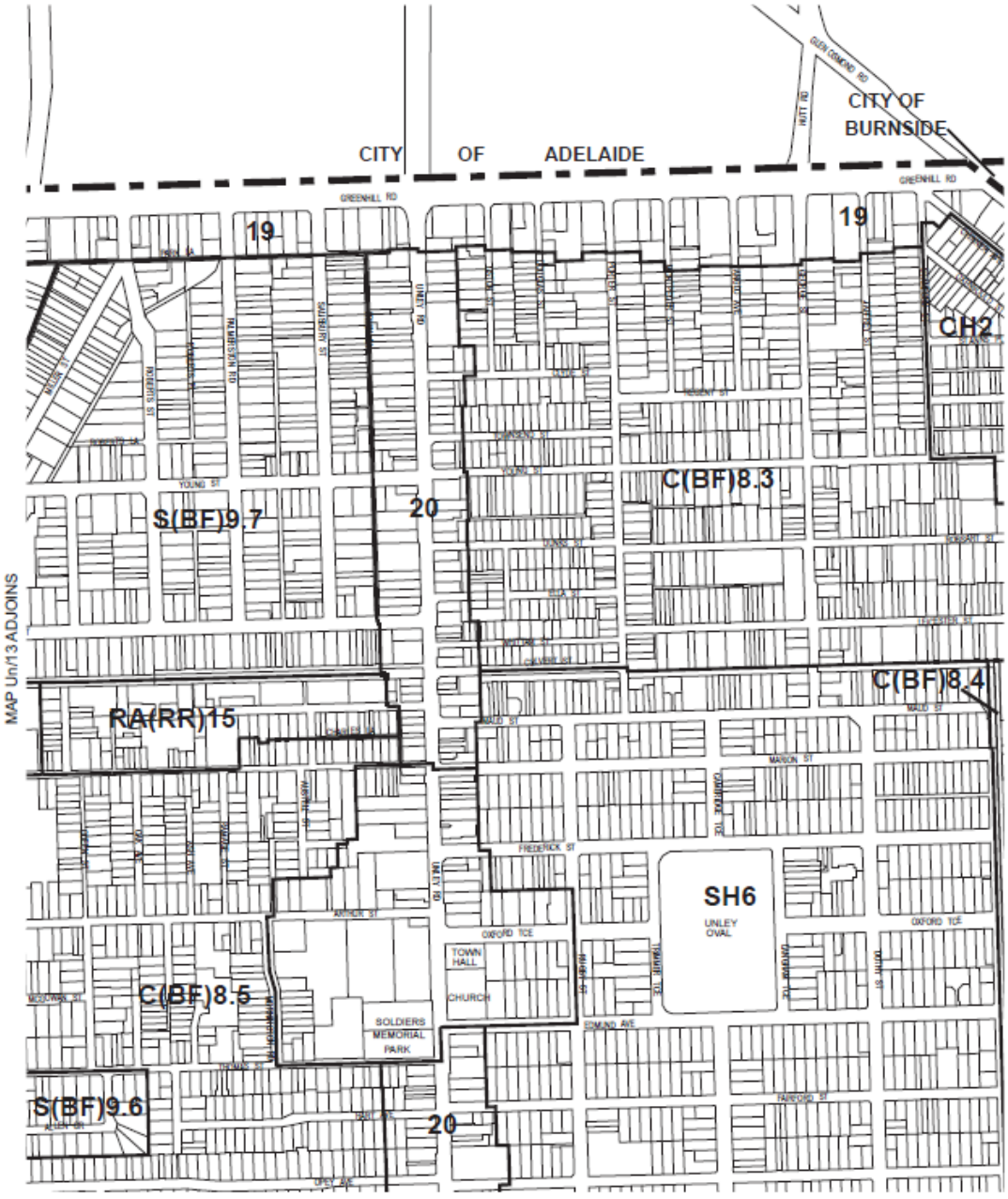
Scale 1:8000

0 500metres

Zone Boundary

Development Plan Boundary

# UNLEY (CITY) ZONES MAP Un/5

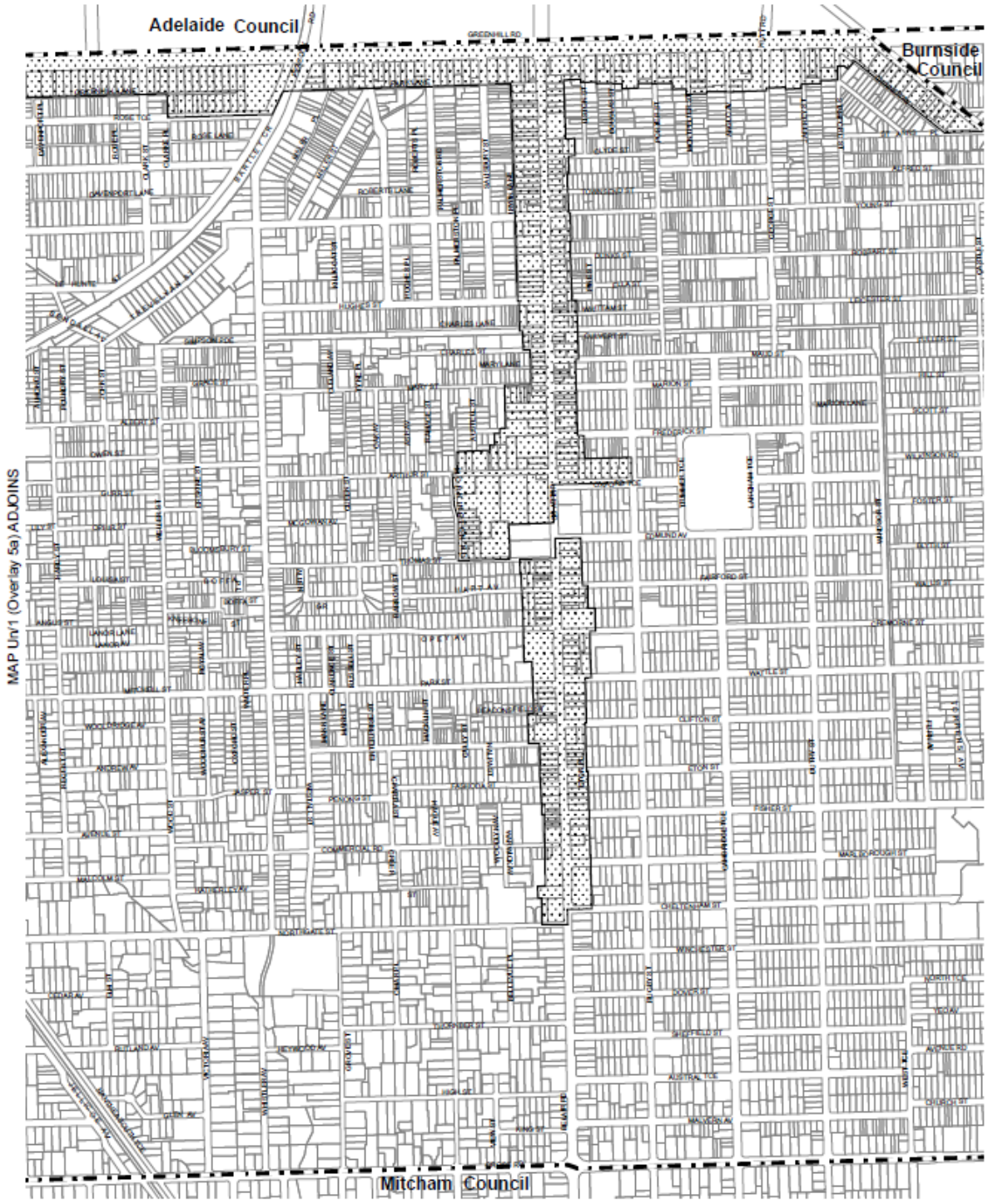



| | |
|---|---|
| **CH2** | Policy Area 2 - Compact Historic Parkside St. Ann's Estate |
| **SH6** | Policy Area 6 - Spacious Historic Unley and Malvern Trimmer Estate |
| **C(BF)8.3** | Policy Area 8 - Compact (Built Form) Precinct 8.3 |
| **C(BF)8.4** | Policy Area 8 - Compact (Built Form) Precinct 8.4 |
| **C(BF)8.5** | Policy Area 8 - Compact (Built Form) Precinct 8.5 |
| **S(BF)9.6** | Policy Area 9 - Spacious (Built Form) Precinct 9.6 |
| **S(BF)9.7** | Policy Area 9 - Spacious (Built Form) Precinct 9.7 |
| **RA(RR)15** | Policy Area 15 - Renewal Area |
| **19** | Policy Area 19 - Boulevard (Greenhill Road) |
| **20** | Policy Area 20 - High Street (Unley Road) |
| | Policy Area Boundary |
| | Development Plan Boundary |

Scale 1:8000

0 500metres

# UNLEY (CITY) POLICY AREAS MAP Un/14




1:12,500

0 100 200 300 400 500 m

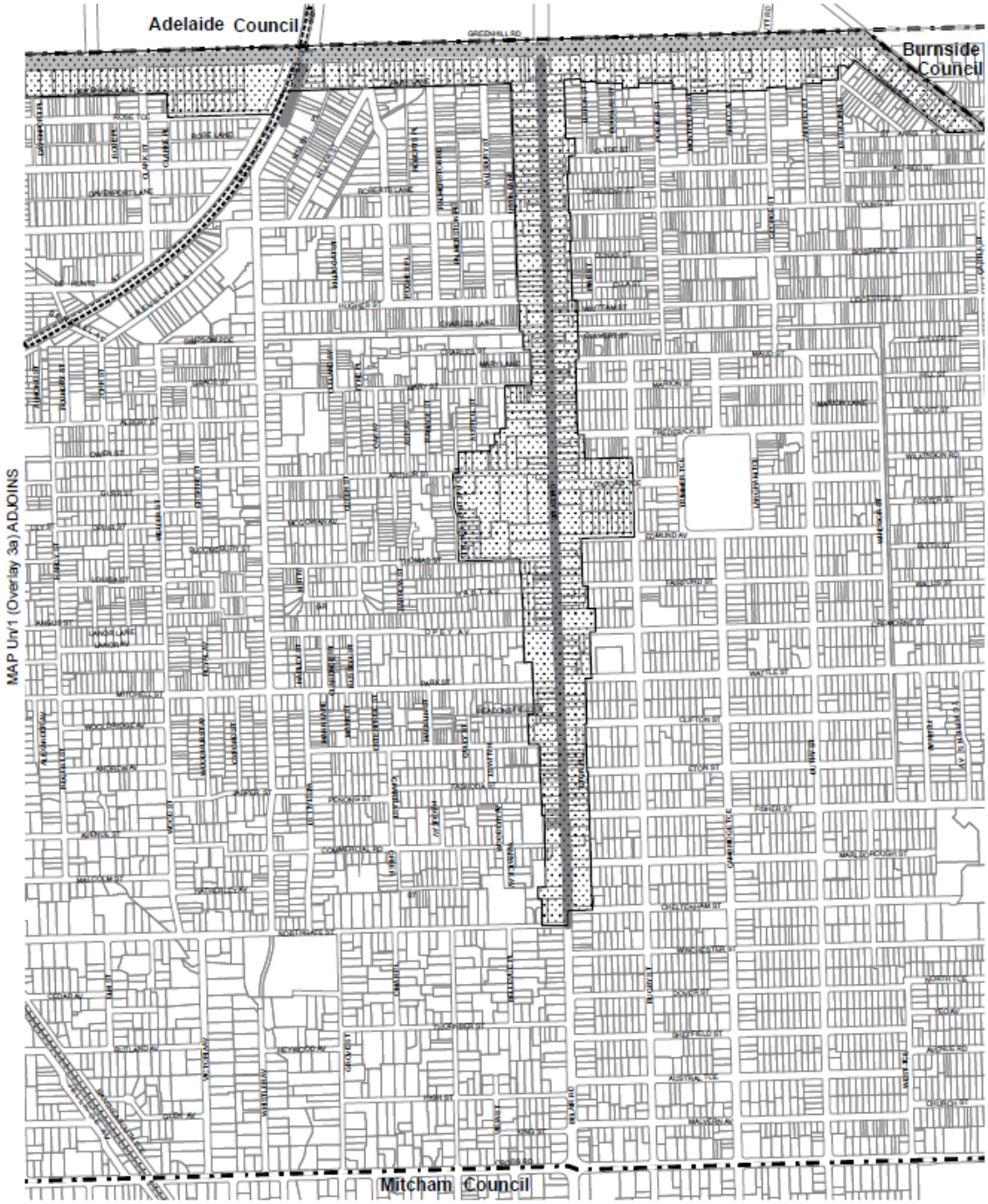
N

Designated Area within which Affordable Housing applies

Development Plan Boundary

# UNLEY (CITY)
# AFFORDABLE HOUSING
# MAP Un/1 (Overlay 5b)

Consolidated - 19 December 2017




N

1:12,500

0 100 200 300 400 500 m

Train Corridor

Tram Corridor

Designated Road: Type A road

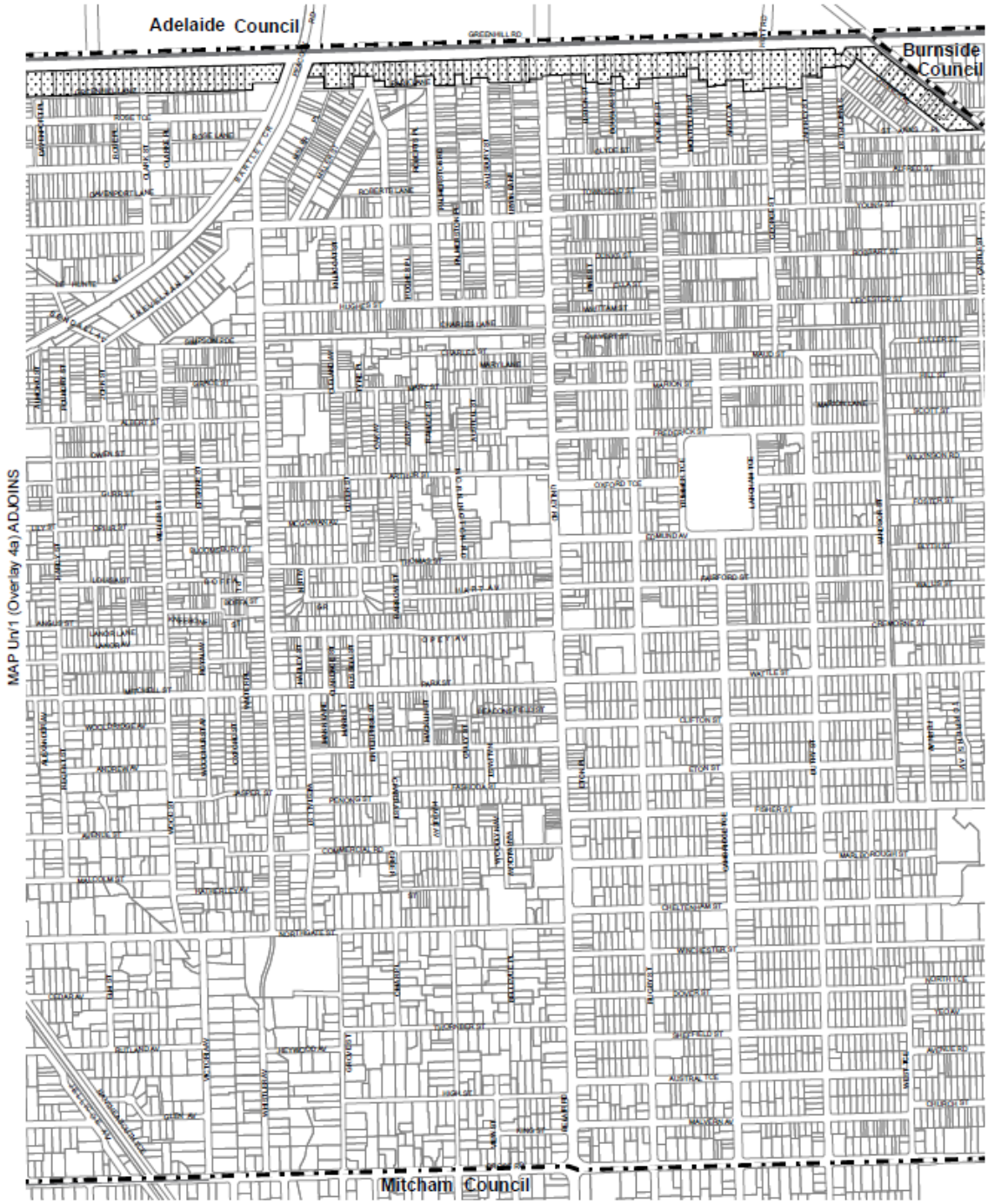
Designated Road: Type B road

Designated Area

Development Plan Boundary

# UNLEY (CITY)
# NOISE AND AIR EMISSIONS
# MAP Un/1 (Overlay 3b)

Consolidated - 16 December 2010




1:12,500

0 100 200 300 400 500 m

N

Designated Area

Strategic Roads Network

Development Plan Boundary

# UNLEY (CITY)
# STRATEGIC TRANSPORT ROUTES
# MAP Un/1 (Overlay 4b)

Consolidated - 19 December 2017

- Historic Character Residential
- Streetscape Character Residential
- Higher Intensity Residential
- Other Residential
- Local Neighbourhood and Specialty Goods Centres
- Special Use
- Mixed Use (Medium - High Density)
- Institutional
- Industrial
- Office/Mixed Use
- DCe — District Centre
- Ex — Excluded
- Railway
- Guided Public Transportation Route
- Local Collector Road
- Major Collector Road
- Secondary Arterial Road
- Primary Arterial Road
- Development Plan Boundary

0 km 1 2

# CITY OF UNLEY STRUCTURE PLAN MAP Un/1 (Overlay 1)

## Site Photographs

Unley Road – looking west to subject land

Unley Road – looking north

Unley Road – looking south

Unley Road - looking east

Hart Avenue – looking west

Hart Avenue – looking east to Unley Road

Unley Road – looking southwest at subject site

Unley Road – looking northwest at subject site

Government of South Australia
Department of Planning, Transport and Infrastructure

| | |
|---|---|
| **Product** | Register Search |
| **Date/Time** | 14/02/2017 03:30PM |
| **Customer Reference** | 27080-04 |
| **Order ID** | 20170214010395 |
| **Cost** | $27.75 |

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# Certificate of Title - Volume 6134 Folio 955

REAL PROPERTY ACT, 1886
South Australia

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| **Parent Title(s)** | CT 6067/120 |
| **Dealing(s) Creating Title** | DDA 12097068 |
| **Title Issued** | 28/03/2014 |
| **Edition** | 2 |
| **Edition Issued** | 24/03/2015 |

## Estate Type

FEE SIMPLE

## Registered Proprietor

3X UNLEY ROAD PTY. LTD. (ACN: 161 696 448)
OF CARE LEVEL 1/162 GREENHILL ROAD PARKSIDE SA 5063

## Description of Land

ALLOTMENT 3 DEPOSITED PLAN 1221
IN THE AREA NAMED UNLEY
HUNDRED OF ADELAIDE

## Easements

TOGETHER WITH FREE AND UNRESTRICTED RIGHT(S) OF WAY OVER THE LAND MARKED A

## Schedule of Dealings

| Dealing Number | Description |
|---|---|
| 11908881 | MORTGAGE TO BENDIGO & ADELAIDE BANK LTD. |
| 12291586 | AGREEMENT UNDER DEVELOPMENT ACT, 1993 PURSUANT TO SECTION 57(1) |

## Notations

### Dealings Affecting Title

NIL

### Priority Notices


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NIL

## Notations on Plan

NIL

## Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G104/1986

## Administrative Interests

NIL



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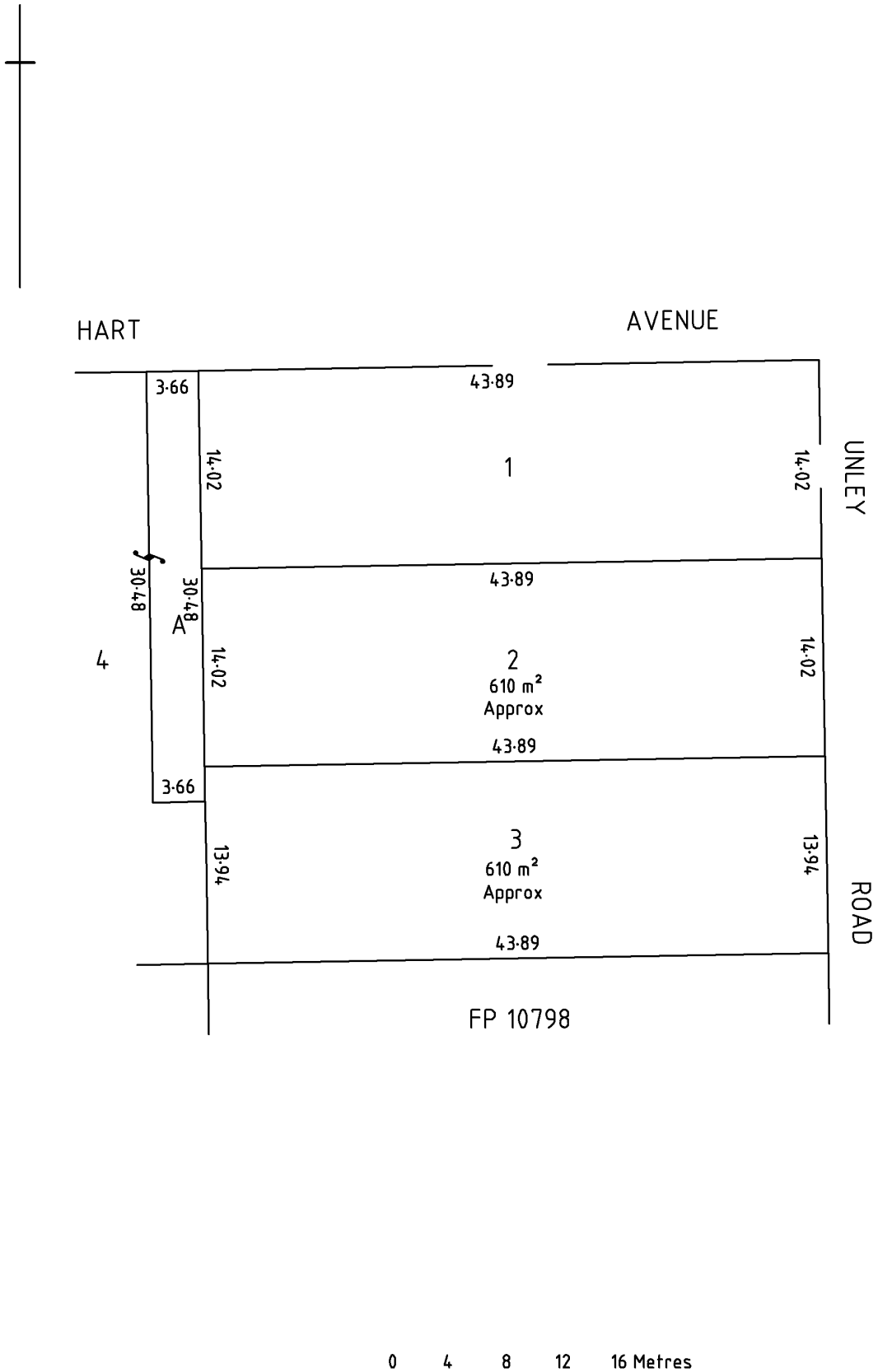



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Government of South Australia
Department of Planning, Transport and Infrastructure

| | |
|---|---|
| **Product** | Register Search |
| **Date/Time** | 14/02/2017 03:22PM |
| **Customer Reference** | 27080-02 |
| **Order ID** | 20170214010193 |
| **Cost** | $27.75 |

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Registrar-General

# Certificate of Title - Volume 5380 Folio 232

REAL PROPERTY ACT, 1886
South Australia

| | |
|---|---|
| **Parent Title(s)** | CT 5177/810 |
| **Dealing(s) Creating Title** | PS 8126223 |
| **Title Issued** | 25/11/1996 |
| **Edition** | 13 |
| **Edition Issued** | 24/03/2015 |

## Estate Type

FEE SIMPLE

## Registered Proprietor

1X UNLEY ROAD PTY. LTD. (ACN: 161 696 555)
OF CARE LEVEL 1/162 GREENHILL ROAD PARKSIDE SA 5063

## Description of Land

ALLOTMENT 1 DEPOSITED PLAN 1221
IN THE AREA NAMED UNLEY
HUNDRED OF ADELAIDE

## Easements

NIL

## Schedule of Dealings

| Dealing Number | Description |
|---|---|
| 11908869 | MORTGAGE TO BENDIGO & ADELAIDE BANK LTD. |
| 12291586 | AGREEMENT UNDER DEVELOPMENT ACT, 1993 PURSUANT TO SECTION 57(1) |

## Notations

### Dealings Affecting Title

NIL

### Priority Notices


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NIL

## Notations on Plan

NIL

## Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G180/1984

## Administrative Interests

NIL



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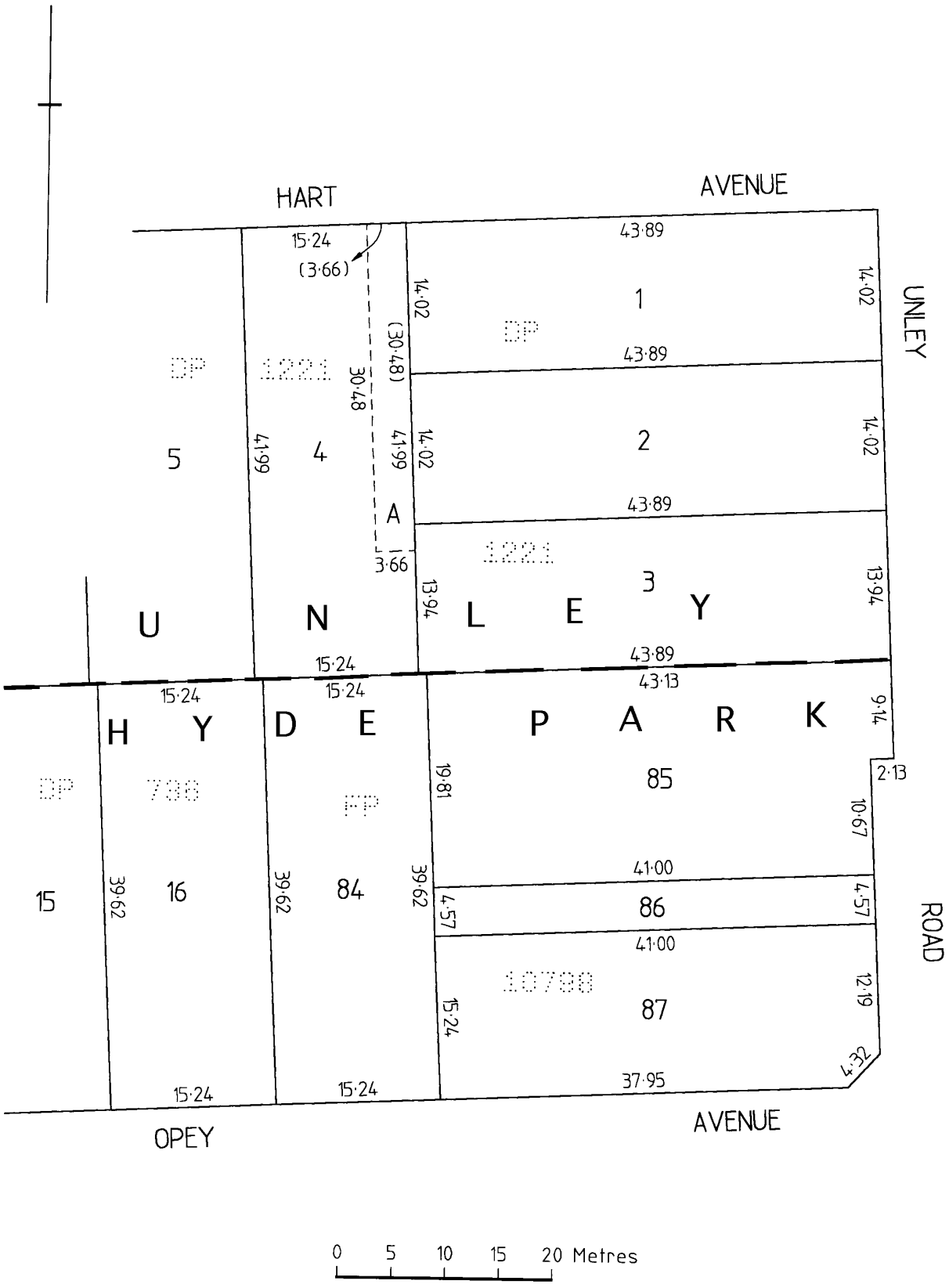
| | |
|---|---|
| **Product** | Register Search |
| **Date/Time** | 14/02/2017 03:22PM |
| **Customer Reference** | 27080-02 |
| **Order ID** | 20170214010193 |
| **Cost** | $27.75 |



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Department of Planning, Transport and Infrastructure

| | |
|---|---|
| **Product** | Register Search |
| **Date/Time** | 14/02/2017 03:34PM |
| **Customer Reference** | 27080-05 |
| **Order ID** | 20170214010483 |
| **Cost** | $27.75 |

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# Certificate of Title - Volume 5380 Folio 234

REAL PROPERTY ACT, 1886
South Australia

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|---|---|
| **Parent Title(s)** | CT 5177/809 |
| **Dealing(s) Creating Title** | PS 8126223 |
| **Title Issued** | 25/11/1996 |
| **Edition** | 12 |
| **Edition Issued** | 24/03/2015 |

## Estate Type

FEE SIMPLE

## Registered Proprietor

4 HART AVENUE PTY. LTD. (ACN: 161 696 582)
OF CARE LEVEL 1/162 GREENHILL ROAD PARKSIDE SA 5063

## Description of Land

ALLOTMENT 4 DEPOSITED PLAN 1221
IN THE AREA NAMED UNLEY
HUNDRED OF ADELAIDE

## Easements

SUBJECT TO FREE AND UNRESTRICTED RIGHT(S) OF WAY OVER THE LAND MARKED A

## Schedule of Dealings

| Dealing Number | Description |
|---|---|
| 11908875 | MORTGAGE TO BENDIGO & ADELAIDE BANK LTD. |
| 12291586 | AGREEMENT UNDER DEVELOPMENT ACT, 1993 PURSUANT TO SECTION 57(1) |

## Notations

### Dealings Affecting Title

NIL

### Priority Notices


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NIL

## Notations on Plan

NIL

## Registrar-General's Notes

NIL

## Administrative Interests

NIL



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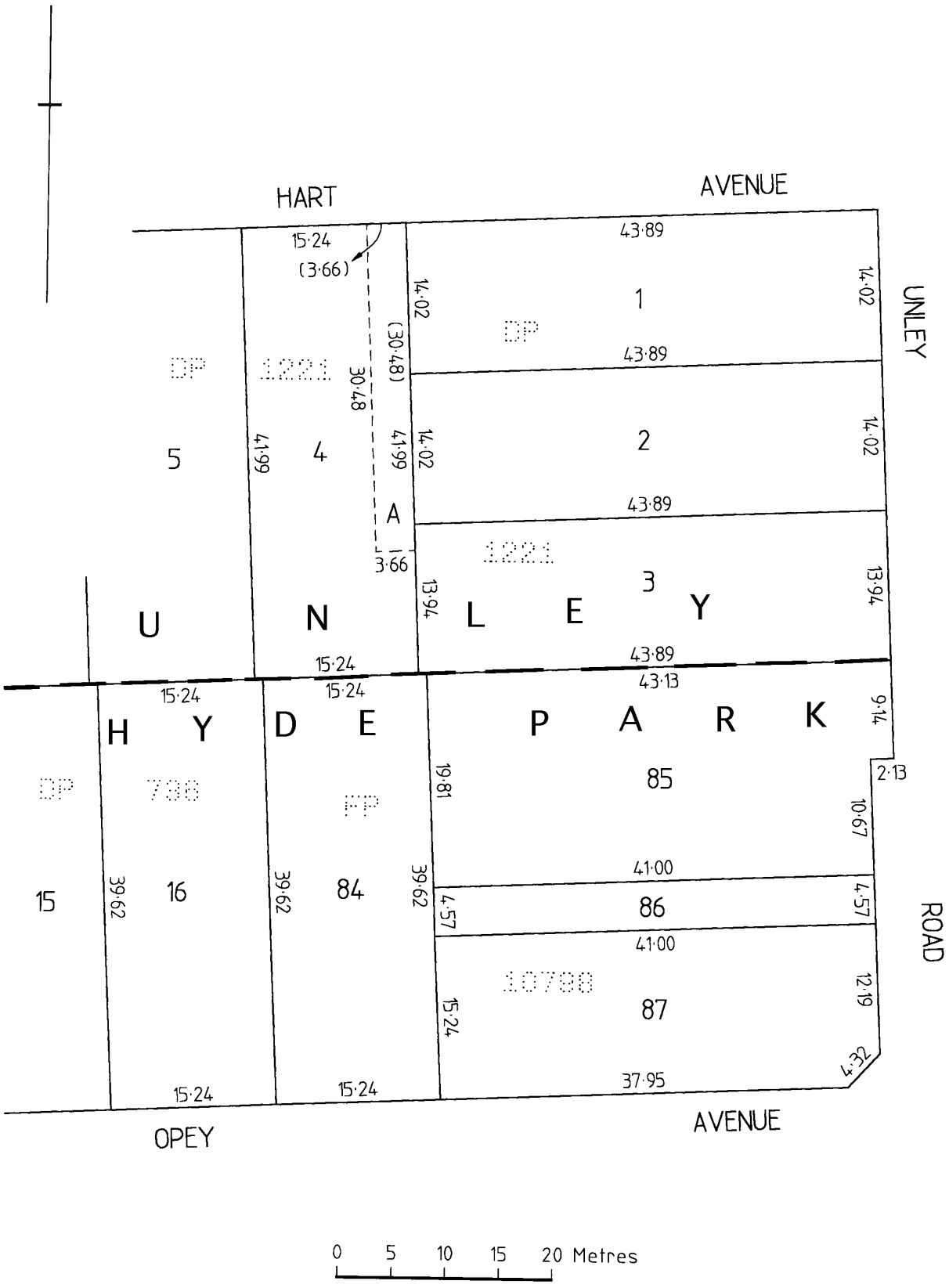
| | |
|---|---|
| **Product** | Register Search |
| **Date/Time** | 14/02/2017 03:34PM |
| **Customer Reference** | 27080-05 |
| **Order ID** | 20170214010483 |
| **Cost** | $27.75 |



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Government of South Australia
Department of Planning, Transport and Infrastructure

| | |
|---|---|
| **Product** | Register Search |
| **Date/Time** | 14/02/2017 03:27PM |
| **Customer Reference** | 27080-03 |
| **Order ID** | 20170214010312 |
| **Cost** | $27.75 |

**The Registrar-General certifies that this Title Register Search displays the records maintained in the Register Book and other notations at the time of searching.**

Registrar-General

# Certificate of Title - Volume 6067 Folio 119

REAL PROPERTY ACT, 1886
South Australia

| | |
|---|---|
| **Parent Title(s)** | CT 5380/233 |
| **Dealing(s) Creating Title** | RT 11419076, T 11419077 |
| **Title Issued** | 02/11/2010 |
| **Edition** | 3 |
| **Edition Issued** | 24/03/2015 |

## Estate Type

FEE SIMPLE

## Registered Proprietor

2X UNLEY ROAD PTY. LTD. (ACN: 161 696 546)
OF CARE LEVEL 1/162 GREENHILL ROAD PARKSIDE SA 5063

## Description of Land

ALLOTMENT 2 DEPOSITED PLAN 1221
IN THE AREA NAMED UNLEY
HUNDRED OF ADELAIDE

## Easements

TOGETHER WITH FREE AND UNRESTRICTED RIGHT(S) OF WAY OVER THE LAND MARKED A

## Schedule of Dealings

| Dealing Number | Description |
|---|---|
| 11908878 | MORTGAGE TO BENDIGO & ADELAIDE BANK LTD. |
| 12291586 | AGREEMENT UNDER DEVELOPMENT ACT, 1993 PURSUANT TO SECTION 57(1) |

## Notations

### Dealings Affecting Title

NIL

### Priority Notices


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NIL

## Notations on Plan

NIL

## Registrar-General's Notes

PLAN FOR LEASE PURPOSES VIDE G104/1986

## Administrative Interests

NIL



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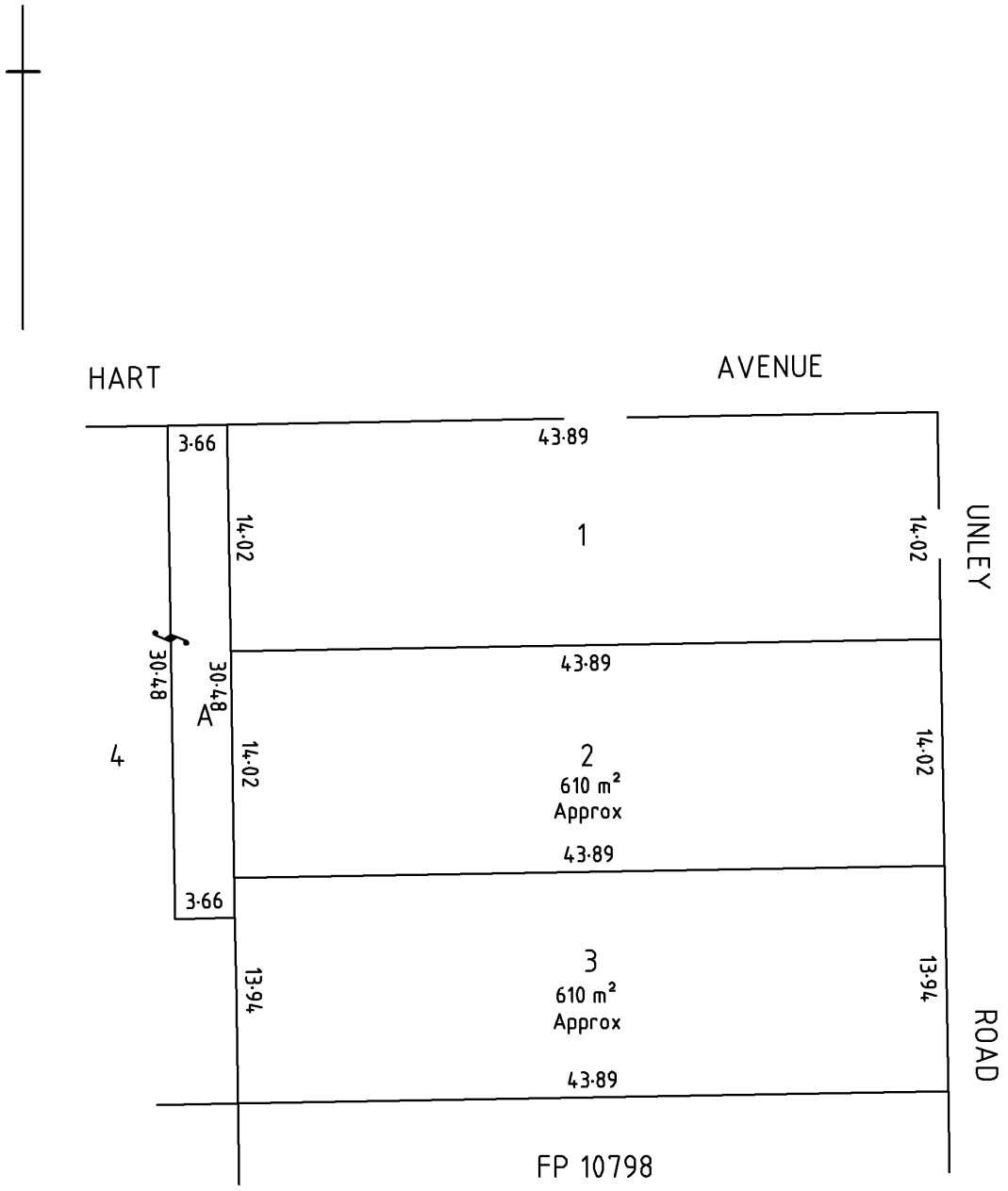


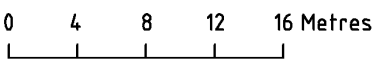



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**DEVELOPMENT REGULATIONS 2008**
**Form of Declaration**
**(Schedule 5 clause 2A)**

**To:** THE DEVELOPMENT ASSESSMENT COMMISSION

**From:** CATCORP PTY LTD
C/- FUTURE URBAN GROUP.

**Date of Application:** 2 / 8 / 2017

**Location of Proposed Development:** .....

House No: 146 Lot No: 1-4 Street: UNLEY ROAD Town/Suburb UNLEY ....

Section No (full/part): .....Hundred: ADELAIDE

Volume: 5380 / 6067 / 6134 / 5380 Folio: 232 / 119 / 955 / 234

**Nature of Proposed Development:** CONSTRUCTION OF 7-STOREY MIXED USE BUILDING COMPRISING GROUND LEVEL COMMERCIAL/RETAIL TENANCIES & LEVELS OF RESIDENTIAL APARTMENTS (59 APARTMENTS), BASEMENT & GROUND LEVEL CAR PARKING.

**I** MILLY NOTT (OF FUTURE URBAN GRO .....**being the applicant/ a person acting on behalf of the applicant (delete the inapplicable statement) for the development described above declare that the proposed development will involve the construction of a building which would, if constructed in accordance with the plans submitted, not be contrary to the regulations prescribed for the purposes of section 86 of the *Electricity Act 1996*. I make this declaration under clause 2A(1) of Schedule 5 of the *Development Regulations 2008*.**

**Date:** 2 / 8 / 2017

**Signed:** .....

Note 1
This declaration is only relevant to those development applications seeking authorisation for a form of development that involves the construction of a building (there is a definition of 'building' contained in section 4(1) of the *Development Act 1993*), other than where the development is limited to –

a) an internal alteration of a building; or
b) an alteration to the walls of a building but not so as to alter the shape of the building.

Note 2
The requirements of section 86 of the *Electricity Act 1996* do not apply in relation to:

a) a fence that is less than 2.0 m in height; or
b) a service line installed specifically to supply electricity to the building or structure by the operator of the transmission or distribution network from which the electricity is being supplied.

Note 3
Section 86 of the *Electricity Act 1996* refers to the erection of buildings in proximity to powerlines. The regulations under this Act prescribe minimum safe clearance distances that must be complied with.

Note 4
The majority of applications will not have any powerline issues, as normal residential setbacks often cause the building to comply with the prescribed powerline clearance distances. Buildings/renovations located far away from powerlines, for example towards the back of properties, will usually also comply.

Particular care needs to be taken where high voltage powerlines exist; where the development:

- is on a major road;
- commercial/industrial in nature; or
- built to the property boundary.

Note 5
Information brochures 'Powerline Clearance Declaration Guide' and 'Building Safely Near Powerlines' have been prepared by the Technical Regulator to assist applicants and other interested persons. Copies of these brochures are available from council and the Office of the Technical Regulator. The brochures and other relevant information can also be found at www.technicalregulator.sa.gov.au

Note 6
In cases where applicants have obtained a written approval from the Technical Regulator to build the development specified above in its current form within the prescribed clearance distances, the applicant is able to sign the form.

# DEVELOPMENT APPLICATION FORM

PLEASE USE BLOCK LETTERS

**COUNCIL:** DAC

**APPLICANT:** CATCORP PTY LTD

Postal Address: C/- FUTURE URBAN GROUP

GPO BOX 2403, ADELAIDE SA 5001

**Owner:** CATCORP PTY LTD

Postal Address: AS ABOVE.

**BUILDER:** TBA

Postal Address: -

Licence No: -

**CONTACT PERSON FOR FURTHER INFORMATION**

Name: MILLY (milly@futureurbangroup.com)
NOTT

Telephone: 08 8221 5511 [work] 0450 965 858 [Ah]

Fax: _____ [work] _____ [Ah]

**EXISTING USE:** COMMERCIAL / RESIDENTIAL

**FOR OFFICE USE**

Development No: _____

Previous Development No: _____

Assessment No: _____

| | |
|---|---|
| ☐ Complying | Application forwarded to DA |
| ☐ Non Complying | Commission/Council on |
| ☐ Notification Cat 2 | / / |
| ☐ Notification Cat 3 | Decision: _____ |
| ☐ Referrals/Concurrences | Type: _____ |
| ☐ DA Commission | Date: / / |

| | Decision required | Fees | Receipt No | Date |
|---|---|---|---|---|
| Planning: | | | | |
| Building: | | | | |
| Land Division: | | | | |
| Additional: | | | | |
| **Development Approval** | | | | |

**DESCRIPTION OF PROPOSED DEVELOPMENT:** 7-STOREY MIXED USE BUILDING WITH GROUND FLOOR CAR

**LOCATION OF PROPOSED DEVELOPMENT:** COMMERCIAL/RETAIL, CAR PARKING (& BASEMENT) & 6 RESIDENTIAL LEVEL

House No: 246 Lot No: 1-4 Street: UNLEY ROAD Town/Suburb: UNLEY

Section No [full/part] _____ Hundred: ADELAIDE Volume: 5380 Folio: 232

Section No [full/part] _____ Hundred: ADELAIDE Volume: 6067 (6134, 5380) Folio: 119 (955, 234)

**LAND DIVISION:**

Site Area [m²] _____ Reserve Area [m²] _____ No of existing allotments _____

Number of additional allotments [excluding road and reserve]: _____ Lease: **YES** ☐ **NO** ☐

**BUILDING RULES CLASSIFICATION SOUGHT:** _____ Present classification: _____

If Class 5,6,78 or 9 classification is sought, state the proposed number of employees: Male: _____ Female: _____

If Class 9a classification is sought, state the number o persons for whom accommodation is provided: _____

If Class 9b classification is sought, state the proposed number of occupants of the various spaces at the premises: _____

**DOES EITHER SCHEDULE 21 OR 22 OF THE DEVELOPMENT REGULATIONS 2008 APPLY?** **YES** ☐ **NO** ☑

**HAS THE CONSTRUCTION INDUSTRY TRAINING FUND ACT 2008 LEVY BEEN PAID?** **YES** ☐ **NO** ☑

**DEVELOPMENT COST** [do not include any fit-out costs]: $ 20 MILLION

I acknowledge that copies of this application and supporting documentation may be provided to interested persons in accordance with the Development Regulations 2008.

**SIGNATURE:** _____ Dated: 2 / 8 / 2017

(on behalf of the applicant)

# 246 UNLEY ROAD, UNLEY

PLANNING STATEMENT

Prepared for:
CATCORP PTY LTD

Date:
2 August 2017

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**Proprietary Information Statement**

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Document Control

| Revision | Description | Author | Date |
|---|---|---|---|
| V1 | Draft | MN | 07/07/2017 |
| V2 | Draft Review | CV | 08/07/2017 |
| V2 | Final | MN/CV | 02/07/2017 |
| | | | |
| | | | |

## CONTENTS


1. INTRODUCTION 1

2. BACKGROUND 2

3. PROPOSAL DESCRIPTION 4

3.1 Proposal Summary ..... 4
3.2 Design Philosophy ..... 4
3.3 Ground, Basement and Lower Basement Levels ..... 5
3.4 Level 1 ..... 6
3.5 Level 2 to Level 5 ..... 6
3.6 Level 6 ..... 7
3.7 Landscaping ..... 7
3.8 Environmental Considerations ..... 8
3.8.1 Waste 8
3.8.2 ESD 8
3.8.3 Noise 9
3.8.4 Contamination 10
3.9 Category of Development ..... 10

4. SITE AND LOCALITY 11

5. DEVELOPMENT PLAN 13

5.1 Desired Character ..... 13
5.1.1 Land Use and Form 13
5.1.2 Heritage 14
5.1.3 Car Parking and Access 14
5.1.4 Pedestrian Environment 14
5.1.5 Environmental 14
5.1.6 Design 15
5.1.7 Existing Built Form Context 15
5.1.8 Living Environment 15
5.2 Height and Scale ..... 16
5.3 Building Appearance and Design ..... 18
5.3.1 Ground Plane 18
5.3.2 Relationship with Heritage Places 20
5.3.3 Car parking 21
5.3.4 Landscaping 21
5.3.5 Materials 23
5.3.6 Building Appearance 24
5.3.7 Services and Site Facilities 26
5.4 Setbacks ..... 27
5.5 Apartment Design ..... 28
5.6 Parking, Access and Traffic ..... 31
5.6.1 Car Parking 31
5.6.2 Bicycle Parking 33
5.6.3 Access and Traffic 34
5.6.4 Servicing 36
5.7 Crime Prevention ..... 37

5.8 Environmental Considerations ..... 38
5.8.1 Waste 38
5.8.2 Services 40
5.8.3 Energy Efficiency 40
5.8.4 Overshadowing 41
5.8.5 Overlooking 42
5.8.6 Stormwater 43
5.8.7 Wind 45
5.8.8 Noise 45
5.9 Affordable Housing ..... 46
6. CONCLUSION ..... 47

## APPENDICES

*Appendix 1. Development Application Form ..... 1*
*Appendix 2. Electricity Act Declaration ..... 2*
*Appendix 3. Certificates of Title ..... 3*
*Appendix 4. Traffic and Parking Assessment prepared by Phil Weaver and Associates ..... 4*
*Appendix 5. Waste Management Plan Prepared by RawTec pTY lTD ..... 5*
*Appendix 6. Building Services and Design Report prepared by Lucid Consulting Australia ..... 6*
*Appendix 7. ESD Report prepared by D Squared Consultants ..... 7*
*Appendix 8. Stormwater Management Report prepared by Structural Systems Pty Ltd ..... 8*
*Appendix 9. Acoustic Design Advice prepared by Resonate Acoustics ..... 9*
*Appendix 10. Plans and Drawings prepared by Tectvs ..... 10*

## FIGURES

*Figure 2.1 Unley Road elevation ..... 2*
*Figure 2.2 Side elevation and 30 degree building envelope ..... 2*
*Figure 4.1 Site and Locality ..... 11*

## 1. INTRODUCTION

The proposed development seeks to demolish all existing buildings and construct a seven storey mixed use building comprising ground level retailing/commercial tenancies, six levels of residential apartments (59 apartments in total), basement and ground level car parking.

Included as appendices to this planning statement are the following documents:

- Appendix 1 – Development Application form;
- Appendix 2 – Electricity Act Declaration;
- Appendix 3 – Certificates of title;
- Appendix 4 – Traffic and Parking Assessment prepared by Phil Weaver and Associates dated 20 July 2017;
- Appendix 5 – Waste Management Plan prepared by RawTec Pty Ltd dated 11 July 2017;
- Appendix 6 – Building Services Design Report prepared by Lucid Consulting Australia dated 7 July 2017;
- Appendix 7 – ESD Report prepared by D-Squared Consultants Pty Ltd dated 2 August 2017; and
- Appendix 8 – Stormwater Management Report prepared by Structural Systems Pty Ltd dated 7 July 2017;
- Appendix 9 – Acoustic Design Advice prepared by Resonate Acoustics dated 30 June 2017;
- Appendix 10 – Landscaping Concept Design prepared by Hassell dated 5 July 2017; and
- Appendix 11 – Plans and Drawings prepared by Tectvs dated 2 August 2017.

As a result of the high quality design; the specialist inputs; our site and locality inspection; and, our assessment of the proposal against the relevant provisions of the Unley (City) Development Plan (consolidated 30 May 2017), we have formed the opinion that the proposal displays significant planning merit and therefore warrants Development Plan Consent.

## 2. BACKGROUND

On the 26 March 2015, the Development Assessment Commission granted Development Plan Consent for Development Application 090/M003/15 involving a 7 level mixed use building comprising ground floor retail, 140 apartments and ten (10) two-storey townhouses, together with landscaped communal areas, basement car parking and associated works (DA/090/M003/15).

The Development Plan Consent was never acted upon and has expired. However, the previously approved development provides important background context in relation to the overall height, scale and form that was supported by the Government Architect (by way of Pre-Lodgement Agreement) and the Development Assessment Commission's granting of Development Plan Consent.

It should be noted that the previous development was approved across a much larger amalgamated site between Hart Street to the north and Opey Avenue to the south. The site was also located adjacent to the Residential Interface (Built Form) Zone to the west. Figure 2.1 depicts the approved Unley Road elevation and Figure 2.2 depicts the side elevation with the 30 degree building envelope plane anticipated by the Urban Corridor Zone.

Figure 2.1 *Unley Road elevation*

Figure 2.2 *Side elevation and 30 degree building envelope*

The subject proposal has effectively used the previously approved development as a guide to prepare a much more deliverable and marketable product of lower scale and which has no Residential Streetscape (Built Form) Zone interface. The proposal is also contained wholly within the 30 degree building envelope plane despite it not being applicable in this particular instance (as the site does not adjoin the Residential Streetscape (Built Form) Zone).

## 3. PROPOSAL DESCRIPTION

### 3.1 Proposal Summary

The proposed development seeks to demolish all existing buildings and construct a seven storey mixed use building comprising ground level retailing/commercial tenancies, six levels of residential apartments (59 apartments in total), basement and ground level car parking.

As identified in the drawings prepared by Tectvs, the western boundary of the subject site (currently the western boundary of 1 Hart Avenue) is proposed to be realigned under a future and separate land division application. This realignment will increase the site area of the neighbouring allotment at 3 Hart Avenue (also owned by the applicant) and provide an even greater separation distance between the subject site and the Residential Streetscape (Built Form) Zone to the west.

The proposed development will be discussed in greater detail below.

### 3.2 Design Philosophy

The proposed development seeks an increased development intensity and scale in a manner that will contribute to a positive urban design quality by commencing the desired framing of Unley Road and offering pedestrian comfort and amenity, integrated and screened car parking areas to the rear, accessible via Hart Avenue.

The proposal seeks to revitalise the locality through the replacement of low scale buildings and underutilised land which does not contribute positively to the desired future character envisaged along this part of Unley Road. As the first development to be constructed along this part of Unley Road, the design does however ensure that it responds positively to both the existing and future urban contexts.

The heavier stone base or podium reinforces the existing lower scale context. The predominately glazed and active ground floor is bordered by dark steel frames and canopies which complement the stone and contribute positively to pedestrian amenity and comfort.

The lighter, glazed upper storeys with balconies projecting from the facades create a greater sense of depth and set in place the new future urban form. The proposal is also contained wholly within the 30 degree building envelope plane despite it not being applicable in this particular instance (as the site does not adjoin the Residential Streetscape (Built Form) Zone).

The building also comprises a number of other external high quality and robust materials including:

- metal screening;
- metal cladding;
- steel;
- stained pre-cast;
- stonework;
- tinted glass; and
- clear glass.

The proposal provides an extensively landscaped communal courtyard area, with a grand, 5-level void above. This area has been designed for shared use, to provide a space for individuals and small group gatherings, and is provided as an extension of the residents' backyard. The void is greened through balcony edge planting and vertical trellis climbers creating an attractive outlook and sense of arrival for guests and residents. Planters on each level allow plants to cascade down over the edge to create a curtain of filtered light.

## 3.3 Ground, Basement and Lower Basement Levels

The car parking area for the proposed development is provided over 1.5 basement levels and ground level providing an overall total of 86 car parks. Access to the undercroft carparking area will be gained via a proposed two-way crossover from Hart Avenue. Another two-way crossover is proposed further west (closer to the western boundary of the site), and will provide access to 9 ground floor carparking spaces, and the basement and lower basement levels. Two-way ramps and their associated landings will connect the basement levels, and will be expressed as a gradient of 1:6 metres. Pedestrian access to the lift and stairs is permitted at each level, and appropriately separated from the vehicle turning paths.

A total of 26 car parking spaces are provided at ground level, of which 20 car parking spaces (including 1 for use by disabled persons) will be allocated for public use associated with the commercial/retail tenancies and residential visitors. The remaining 6 car parking spaces on ground level, plus all 60 car parking spaces in the basement levels will be allocated for residents. Specifically, the 4 pairs of stacked car parking spaces located in the basement level will be allocated to apartments which are sold with two car parking spaces.

There are also 28 wall-mounted bicycle racks in the basement level and 8 bicycle racks at ground level.

Services and external apartment storage will be located over the ground, basement and lower basement levels. Waste will be stored in 2 separate rooms both located on ground level. The eastern waste room contains the waste chute system which is connected to the residential levels above, whilst the other room is used for storage of waste prior to collection and the bin wash down area. The waste arrangements will be further detailed in the Environmental Considerations section of this Statement.

At ground level, four commercial/retail tenancies are proposed to front Unley Road, with a combined total floor area of approximately 580 square metres. The floor area is distributed as follows:

- Tenancy 1 – 153 square metres;
- Tenancy 2 – 147 square metres;
- Tenancy 3 – 157 square metres; and
- Tenancy 4 – 122 square metres.

For the purposes of this application, the uses are envisaged to include a shop/restaurant, two retail tenancies and an office/consulting room, however the exact operation of these land uses will be confirmed under separate future development applications.

The opportunity for outdoor dining at the Unley Road/Hart Avenue corner has been identified, and a potential design for this space has been included as part of the Landscaping Concept Plan prepared by Hassell and included in Appendix 10. This space could provide outdoor dining associated with a future café/restaurant, enabling the development to further engage with the streetscape, and provide a more active and comfortable pedestrian experience. Adjustments to side street parking would be required to facilitate the protuberance, to create sufficient space for a potential outdoor dining area.

We acknowledge that these alterations would be subject to further consultations with the City of Unley Council for their ultimate approval as these changes affect the public realm.

A shared bathroom/toilet has also been provided behind the tenancies in the undercroft car parking area.

The main entrance and lobby area for the residential apartments is located centrally on the ground floor fronting Unley Road. This room also includes resident mailbox facilities and a central lift which enables access to all residential floors and basement parking levels. Access to residential levels will be restricted to residents and their visitors only through the use of a key card and/or intercom system. The lobby is directly accessible via doors to the undercroft carparking area.

### 3.4 Level 1

On Level 1, a total of 11 apartments are proposed comprising of the following:

- one, two bedroom, two bathroom, and study apartment of 98 square metres and a 52 square metre balcony;
- two, one bedroom, one bathroom and study apartments of 60 square metres and a 15 square metre balcony;
- two, two bedroom and one bathroom apartments of 73 square metres and a 40 square metre balcony; and
- six, two bedroom and two bathroom apartments between 81 and 96 square metres in area with balconies between 41 and 86 square metres in area.

Air conditioning units will be located against the building, on apartment balconies so as to not be seen from pedestrian level.

A total of between 6 and 8.5 cubic metres of internal and external storage space will be provided to each dwelling.

Level 1 is setback from 0 metres from Unley Road, Hart Avenue and the southern boundary. There will be a 15.4 metre setback from the western boundary to the store room fronting Hart Avenue, and the remainder of the undercroft carpark.

### 3.5 Level 2 to Level 5

Across Levels 2 to 5, a total of 11apartments are proposed on each floor, comprising of the following:

- one, two bedroom, two bathroom and study apartment of 98 square metres and a 24 square metre balcony;
- two, one bedroom, one bathroom and study apartments of 60 square metres and a 7 square metre balcony;
- two, two bedroom and one bathroom apartments of 73 square metres and a 12 square metre balcony; and
- six, two bedroom and two bathroom apartments ranging between 81 and 96 square metres in floor area with balconies ranging between 16 and 39 square metres in area.

Air conditioning units will be located against the building, on apartment balconies so as to not be seen from pedestrian level.

A total of between 6 and 8.5 cubic metres of internal and external storage space will be provided to each dwelling.

Levels 2 to 5 will be setback from all boundaries as follows:

- Unley Road – 2.4 metres to balcony (and part of façade) and 5.2 metres to the main façade generally;
- Hart Avenue - 2 metres to balcony and 3.2 metres to facade;
- Southern boundary - 2 metres to balcony and 3.2 metres to facade; and
- Western boundary – 16.8 metres.

## 3.6 Level 6

At Level 6 there are four, three bedroom, two bathrooms apartments between 152 and 155 square metres in floor area with balconies ranging between 60 and 74 square metres in area.

Air conditioning units will be located against the building, on apartment balconies so as to not be seen from pedestrian level.

A total of 10 cubic metres of internal and external storage space will be provided to each dwelling.

Level 6 will be setback from all boundaries as follows:

- Unley Road – 2.4 metres to balcony and 7.3 metres to main building façade;
- Hart Avenue - 3.2 metres to balcony and 4.2 metres to main building façade;
- Southern boundary - 3.2 metres to balcony and 4.2 metres to building façade; and
- Western boundary – 16.8 metres to balcony and 22.4 metres to building façade.

## 3.7 Landscaping

A Landscaping Concept Plan has been prepared by Hassell and is included in Appendix 10. This plan details the proposed landscaping for the development, which includes external façade greening and a communal internal courtyard.

Externally, the northern, eastern and western façades will feature greening over the podium element, and all facades will also include green filigree to the vertical screens on the upper levels.

A communal green courtyard space with a 5 level void above is also provided centrally within the building. The verdant garden setting provides seating areas for individuals and small groups as somewhat of an extension to the private open space provided to each apartment. The void is greened through balcony edge planting and vertical trellis climbers creating an attractive outlook and sense of arrival for guests and residents. These planters are located in front of the walls that face the lift to produce a dramatic entrance effect whilst encouraging filtered light penetration as they cascade down to lower levels.

Vertical columns reaching from the lobby space up through the central void have also been included in this central atrium to create an immersive experience for visitors and residents. The layout of columns responds to the communal courtyard creating shifting filtered light within the void to amplify the verticality of the space.

## 3.8 Environmental Considerations

### 3.8.1 Waste

A Waste Management Plan for the proposed development has been prepared by RawTec Pty Ltd, and is included in Appendix 5.

The proposed development utilises a chute system which is to be managed by building services and collected via a private waste contractor.

Residents will be required to transport their waste to the chute located on each residential level, behind a door near the northern staircase. The chute will include a diverter, allowing residents to allocate their waste as either 'general' or 'recycling'. Waste will then travel down to ground level, and distributed into the corresponding bin.

Commercial tenancies will be required to manually transport their waste directly to the waste storage room.

Waste from the subject site is proposed to be separated into general waste and comingled recycling waste. Although RawTec have recommended provision of separate bins for organic waste, inclusion of this waste stream will not be accommodated as a part of this application, and instead will be re-assessed for potential inclusion once the building is developed and in operation. Hard waste, e-waste, office paper and CFL/Lighting will be collected from the subject site by separate contractors on an "as needs" basis, or privately arranged to be dropped off to their respective waste disposal locations.

Building services will be responsible for monitoring the levels of waste in the chute room, and will move full bins to the larger waste storage room in the north western corner of the proposed building when required. Building services will also coordinate the collection of waste and washing down of bins.

At the time of collection, the private contractor will reverse into the private laneway adjacent to the western boundary from Hart Avenue, load the waste, then exit the site onto Hart Avenue in a forward direction. Based on predicted volumes, there will be up to 9 collections per week for general waste and co-mingled recycling. This estimated number of collections includes the collection of predicted organic waste volumes, whether these are combined within the general waste stream or included as a separate stream at a later date.

### 3.8.2 ESD

D Squared Consulting have been engaged to prepare an ESD Report for the proposed development (included in Appendix 7). The report confirms that the proposed development will be water and energy efficient, whilst achieving a high level of thermal comfort for future occupants. Dwellings have been designed to achieve a 7 National House Energy Rating (NatHERS), through passive design and good quality building materials. Further, communal areas encourage social interaction, whilst also providing residents with green spaces for personal enjoyment.

The energy efficiency of the building is achieved through optimising the network of installed systems including orientation, shading, insulation, natural light, ventilation and lifespan considerations, including:

- double glazing;
- energy efficient LED lighting;
- day/night energy efficient air conditioning system;
- solar gas boosted hot water system;
- energy efficient appliances such as induction cooktops and energy efficient dishwashers;
- energy Metering;
- demand controlled car park ventilation systems;
- photovoltaic panels on roof;
- low environmental impact by use of low embodied energy materials and finishes and low water usage features and plantings;
- using zero ODP refrigerants and insulation;
- battery connection to support use of renewable energy to common areas;
- high level of indoor environment and air quality through natural ventilation strategies;
- interactive solar shading to encourage the use of natural light;
- infrastructure for connection to embedded network if deemed beneficial to future residents;
- selection of materials with a high recycled material content;
- section of materials with a comparatively low embodied energy/carbon profile wherever possible;
- a connection for future e-charging for cars; and
- managing construction waste such that a minimum of 90 percent of all waste is diverted from landfill.

D Squared estimate that as a result of including the above energy initiatives, it is expected that the apartments will have an annual energy usage of approximately 50 percent of a standard NCC compliant dwelling (excluding internal equipment loads and occupant behaviours). Further, apartments are also predicted to have an annual water usage of approximately 30 percent of a standard NCC compliant dwelling.

### 3.8.3 Noise

Resonate Acoustics have been engaged to assess various noise impacts. A copy of their report is included in Appendix 9. Resonate Acoustics have concluded that the proposal will be able to achieve the required Environment Protection (Noise) Policy 2007 noise levels by utilising specific building materials, glazing and sealants. Some of these noise attenuation strategies include:

- Use of 500 millimetre cavities over bedrooms in the penthouse apartments facing Unley Road (400 millimetre cavities for all other areas are satisfactory);
- Either 1 or 2 sheets of 13 millimetre sound rated plasterboard internal lining for top floor external walls (depending on what level of sound insulation is desired);

- Glazing with a specific weighted sound reduction rating;
- All openable windows and doors are to have rubber compression or contact seals (or acoustically equivalent seals); and
- Appropriate noise attenuation enclosures/barriers for the mechanical services and plants which will be finalised during the detailed design phase.

#### 3.8.4 Contamination

Given the existing and historical use of the site, it is considered that there would be a very low risk of contamination being present which would pose unacceptable health or environmental risks to future residents, visitors and pedestrians and other users accessing the site.

## 3.9 Category of Development

According to the Procedural Matters section of the Urban Corridor Zone the proposed development is not located on land adjacent to the Residential Zone and should therefore be assessed as a category 1 development.

## 4. SITE AND LOCALITY

The subject site is located on the western side of Unley Road between Hart Avenue to the north and Opey Avenue to the south. The site comprises of 4 allotments, legally described as:

- Allotment 1 in Certificate of Title Volume 5380 Folio 232;
- Allotment 2 in Certificate of Title Volume 6067 Folio 119;
- Allotment 3 in Certificate of Title Volume 6134 Folio 955; and
- Allotment 4 in Certificate of Title Volume 5380 Folio 234.

Figure 4.1 *Site and Locality*

The site is otherwise known as 244-246 Unley Road and 1 Hart Avenue Unley, has a 42 metre frontage to Unley Road, a 59.2 metre frontage to Hart Avenue and a total site area of 2,494 square metres. The subject site is located within the Urban Corridor Zone and specifically in High Street (Unley Road) Policy Area 20. The subject land is not located adjacent to land within the Residential Zone.

On the allotment fronting Hart Avenue is a single storey detached dwelling and associated outbuilding. This site has a free and unrestricted right of way over the laneway to the east of the dwelling.

Fronting Unley Road are four commercial tenancies of around 1,500 square metres of floor area. Businesses currently operating from these sites include F45 Training Unley, Plaster Fun House and Connekt Plumbing. Rear access to these sites is obtained via a single crossover off Hart Avenue.

The locality is characterised by a range of commercial businesses along Unley Road predominantly of single storey form with a few two storey buildings together with low-scale residential development in the surrounding local streets. Residential development in the locality comprises mostly of single storey detached dwellings, however recent development in the area also reflects a two storey built form.

Unley Road is characterised by narrow-fronted commercial buildings with the majority including little to no setbacks from each other or front boundaries. These long-standing buildings present a continuous frontage along Unley Road with verandahs generally extending over the pedestrian footpaths. Many of these buildings are single storey in form, some of which are heritage listed. Two storey developments also appear intermittently along Unley Road. The Local Heritage listed Soldiers Memorial Garden is located approximately 100 metres north of the subject site, and the State and Local Heritage listed Unley Town Hall and Church are located a further 100 metres north.

These significant buildings are located within the District Centre Zone. This Zone also includes the Unley Shopping Centre which supports the surrounding residential area.

To the south, there is further commercial development including the Unley Metro Centre and the Cremorne Hotel (Local Heritage Place), both located approximately 50 metres from the subject site.

Unley Road is a two-way arterial road which supports two vehicle lanes and a bike lane in both directions. Traffic is restricted to 60 kilometres per hour. The bicycle lane operates between 7:30am and 9:00am Monday to Friday on the western side of the road and between 4:30pm and 6:00pm Monday to Friday on the eastern side of the road. The road reserve is approximately 14 metres wide with time restricted on-street car parking permitted along both sides between 9:00am and 5:00pm Monday to Friday and between 9:00am and 12:00 noon on Saturday. A 30 metre parking embayment is also provided to the south, and a bus zone is located in front of the subject site, as well as along the eastern side of Unley Road in front of the Cremorne Hotel.

Hart Avenue is approximately 8 metres in width, and features approximately 2 metres of landscaped verge on either side. On the southern side, parking is permitted for one hour periods between 9:00am and 5:00pm Monday to Friday and between 9:00am and 12:00 noon on Saturday, then is unrestricted further west of the subject site. A loading zone is provided on the northern side, west of the Unley Road intersection, for a distance of approximately 10 metres. Parking further west then becomes unrestricted.

The subject site is highly accessible by public transport, with “Go Zone” bus stops located directly in front of the site and along both sides of Unley Road.

Unley Road does not include regular landscaping, however there are pockets where the built form has been setback, which has allowed for the inclusion of street trees, shrubs and public seating. The residential streets off Unley Road, including Hart Avenue, are generally lined with mature trees of varying species.

## 5. DEVELOPMENT PLAN

The proposed development is located within High Street Policy Area 20 of the Urban Corridor Zone as identified in the City of Unley Development Plan (consolidated version 30 May 2017).

Our planning assessment focuses on the matters which we consider most relevant in determining the merit, or otherwise, of the proposal, namely:

- Desired character;
- Height and scale;
- Building appearance and design;
- Setbacks;
- Apartment design;
- Parking, access and traffic;
- Crime prevention;
- Environmental Considerations; and
- Affordable Housing.

Our following assessment should be read in conjunction with the proposal plans and specialist reports accompanying the development application and included as appendices to this planning report.

### 5.1 Desired Character

#### 5.1.1 Land Use and Form

The desired character envisaged for the Urban Corridor Zone supports mixed use development along Unley Road. Development is encouraged to create a linear corridor that frames Unley Road and which creates an active street frontage. Buildings of 3 or more storeys will be the predominant built form. The proposal achieves the desired character at this general level.

The siting and design of new buildings are encouraged to achieve high quality urban design outcomes. Development is expected to be designed within defined building envelopes where buildings at the periphery of the zone are to provide an appropriate height and scale transition to development in adjacent zones of a lower scale and intensity. Impacts on adjoining zones will also be minimised through appropriate land uses, design and location of on-site activities/windows/balconies, and use of landscaping. Specifically, the desired character for the High Street Policy Area suggests that overlooking, overshadowing and emission impacts will be moderated through good design and mitigation techniques, however, it is noted that noise and air amenity cannot be expected to be equivalent to that which is experienced within a purely residential area. Whilst not adjacent to a zone of lower scale and intensity, the overall form of the development satisfies the defined building envelope set out under Urban Corridor Zone PDC 13. The proposed development is also separated from the Residential Streetscape (Built Form) Zone by approximately 30.4 metres which is a considerable distance to mitigate the aforementioned impacts, including traffic and access.

### 5.1.2 Heritage

Contextual qualities, including the setting and juxtaposition of heritage places/character items with new or refurbished development are to be respected. The proposed development is located opposite local heritage places, however due to the width of Unley Road and the separation this affords to such places, we are of the opinion that the proposal will not detrimentally effect the setting of these places.

### 5.1.3 Car Parking and Access

The desired character also recommends that access will occur mainly from secondary road frontages such as Hart Avenue; and, through-site integrated and shared rights-of-way should be established. Building design is encouraged to be people orientated, providing safe and convenient access to and through buildings from roads and parking areas. There is a strong a desire for parking areas to be consolidated, shared and screened from public view and which minimise negative impacts on adjoining residential areas through measures such as appropriate separation, screens and buffer landscaping. In our opinion, the proposed development satisfies all these outcomes whereby residents and visitors will have direct, safe, convenient and comfortable access between the residential/non-residential land uses and the car park. The car parking area is also appropriately screened (with the exception of the public and private car park entrances along Hart Avenue) and there is the potential to link the private access way to a future development to the south.

In order to achieve the desired building design outcomes and car parking and access links, the desired character for the High Street Policy Area states that it will be necessary for existing small and narrow sites to be amalgamated and their redevelopment co-ordinated. The proposed development assists this process.

### 5.1.4 Pedestrian Environment

A high amenity pedestrian environment is to be established that provides integrated linkages to adjacent centres, public transport stops and public spaces. The desired character for the High Street Policy Area seeks to maintain a safe and efficient movement system (for significant private vehicle numbers as well as critical public transport links) in manner that is balanced with the desire to transform these strips into vibrant, intimate and appealing mixed use pedestrian friendly corridors of small scale retail, mixed business and entertainment facilities at ground and lower levels with medium to high density living at upper levels of multi-storey buildings. The proposed development is consistent with these aspects of the desired character statement.

### 5.1.5 Environmental

Well-designed landscaping is encouraged to assist in visually softening large building façades, to screen and buffer parking/service areas/zone interface areas, and provide amenity, biodiversity and micro-climate benefits. Water sensitive urban design (WSUD) for the harvest, treatment, storage and reuse of stormwater, and environmentally sustainable design (ESD) for reduction in energy consumption through passive design, construction and operation is envisaged within a new development. Green (vegetated) places will assist urban heat island effects and roof top gardens will provide opportunities for private and communal open space. The proposal provides a substantial internal atrium space that will be landscaped and will offer significant micro-climate benefits. The proposal also provides rainwater tanks. These matters are addressed in the landscape plan, stormwater plan and ESD report striking a chord with these particular aspects of the desired character statement.

### 5.1.6 Design

The High Street Policy Area demands high quality buildings and associated site works that seek to improve the comfort, safety, convenience and appeal of the public realm and the pedestrian environment for visitors and residents through a variety of measures. The proposal achieves this by:

- creating visually interesting, highly transparent and varied shop fronts and building entries;
- providing pedestrian shelter along Unley Road and Hart Avenue adjacent shop fronts;
- providing an accessible and appealing link between shops and businesses along Unley Road and the car parking area to the rear or underneath the building;
- allowing the opportunity to provide occasional outdoor dining for the restaurant/café tenancy (if required by the operator);
- providing a private access way that is paved and well-lit to provide an attractive entrance that will integrate with Hart Avenue; and
- locating parking areas under and behind the building to ensure ground floor levels match public footpath levels along Unley Road to provide for level access and direct interaction to the public realm.

### 5.1.7 Existing Built Form Context

The High Street Policy Area requires development to respect the predominant, traditional rhythm of narrow–fronted shop tenancies and the siting, height and street format. The proposal achieves this by:

- incorporating a dominant street level podium building form along Unley Road reflecting a two storey form with the upper levels offset and setback behind to reinforce a comfortable human scale;
- using modern materials and finishes within the podium to complement the key traditional building and shop-front elements including verandahs, parapet facades and clear-glazed narrow shop front displays;
- creating a largely continuous built edge to Unley Road whilst reflecting the traditional narrow-fronted tenancies within the podium form reflecting a fine-grain character and detailing; and
- reinforcing the nil street boundary setback to frame the Unley Road corridor.

### 5.1.8 Living Environment

The High Street Policy Area also seeks to create high quality living environments. The proposal achieves this by:

- applying sustainable design solutions to optimise natural ventilation and capture of sun or natural daylight;
- optimising resident and visitor safety, convenience and amenity by providing secure private and publicly accessible car parks, lighting and surveillance of public and common spaces;
- locating and screening goods storage, refuse collection areas in a sensitive manner; and

- locating and designing sensitive habitable rooms and balconies to optimise the utility of those spaces and minimise noise intrusion.

Overall, we have formed the opinion that the proposed development achieves the intent of the desired character statement set out for both the Urban Corridor Zone and High Street Policy Area.

## 5.2 Height and Scale

*Urban Corridor Zone*

***PDC 5*** *Residential development should achieve a minimum net residential site density in accordance with the following:*

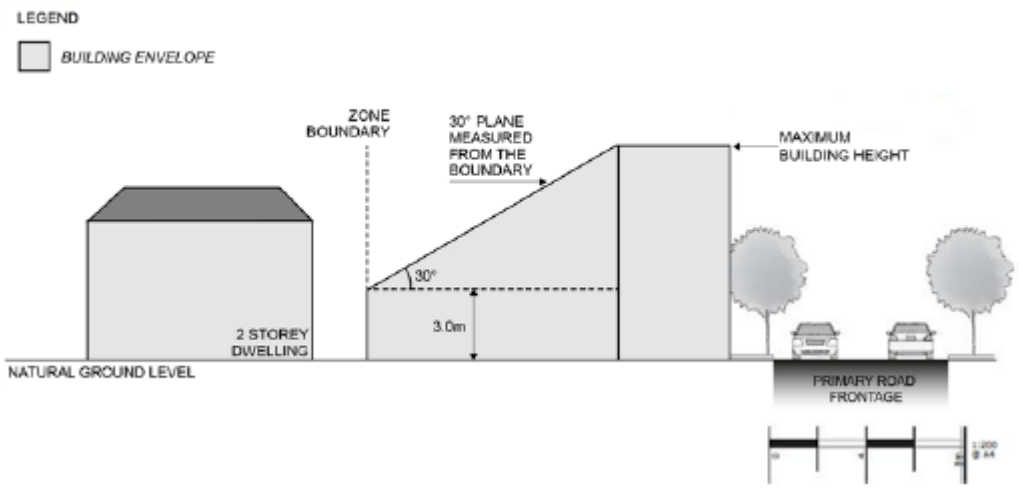
| Policy Area | Minimum net residential site density |
|---|---|
| High Street (Unley Road) Policy Area 20 | 60 dwellings per hectare net |

***PDC 12*** *Except where airport building height restrictions prevail, the interface height provisions require a lesser height, or an alternative maximum building height is shown on Concept Plan Maps Un/1 to 7, building heights (excluding any rooftop mechanical plant or equipment) should be consistent with the following parameters:*

| Policy Area | Minimum Building Height | Maximum Building Height |
|---|---|---|
| High Street (Unley Road) Policy Area 20 | 3 storeys (11.5 metres) | 5 storeys and up to 18.5 metres |

***PDC 13*** *To minimise building massing at the interface with development outside of the zone, buildings should be constructed within a building envelope provided by a 30 degree plane, measured from a height of 3 metres above natural ground level at the zone boundary (except where this boundary is a primary road frontage, as illustrated in Figure 1).*

Figure 1



*Medium and High Rise Development*

***Objective 1:*** *Medium and high rise development that provides housing choice and employment opportunities.*

The proposed development is seven storeys (24.5 metres) exceeding the maximum five storey limit (18.5 metres) prescribed by PDC 12. Notwithstanding the fact that the Government Architect and Development Assessment Commission previously supported a seven storey building of much larger scale, bulk and mass than that proposed, we are of the opinion that the height of this particular development is acceptable in its existing and future context for the following reasons:

- The substantive component of the proposed building will be 18.5 metres in height (measured from Unley Road ground level to the top of balustrade at Level 5) which is the maximum building height envisaged by Urban Corridor Zone PDC 12;
- The height of the building is moderated through the strong podium element which is sited on the street boundary; the 5.2 metre building setback and 2.4 metre balcony setback above podium level to Level 5; and, the 7.8 metre building setback and 5.2 metre balcony setback of the upper level;
- While the subject site does not adjoin the Residential Streetscape (Built Form) Zone, the overall form of the building sits comfortably within the 30 degree building envelope plane anticipated by Urban Corridor Zone PDC 13;
- The proposed development is separated from the Residential Streetscape (Built Form) Zone between 30.4 metres (podium) and 35.2 metres (upper levels) which is a considerable distance to mitigate any potential overlooking, overshadowing or visual impacts that may occur as a result of the additional height;
- The subject site is located less than 100 metres south of the newly created Unley Central Precinct which will contemplate buildings of a higher scale than that proposed;
- The proposed development respects the existing low scale context through the strong and prominent podium form and will sit comfortably in the future context which will progressively overtime give rise to a new urban form in accord with the High Street Policy Area;
- There is potential for buildings within the zone to penetrate the Adelaide International Airport Obstacle Limitation Surface as stated in the desired character statement of the Urban Corridor Zone. This height is substantially higher than the proposed building height;
- The 18.5 metre height of the building to Unley Road (measured from Unley Road ground level to the top of balustrade at Level 5) relates to the width of the Unley Road carriageway to ensure a comfortable human scale is achieved and no overbearing bulk or mass overwhelms the public realm;
- The proposed development represents a density of 236 dwellings per hectare which is consistent with Urban Corridor Zone PDC 5; and
- The development will provide housing choice and employment opportunities satisfying Medium and High Rise Development Objective 1.

In addition to the above, there are a number of design features that should be recognised in the context of height, including:

- an accessible, safe and secure linkage is provided off Hart Avenue which has the potential to be integrated with a development on the adjacent southern site;
- all car parking is provided underground or to the rear and screened from the public realm;
- a range of adaptable dwelling types is provided;
- a high quality internal green atrium supported by services that ensure ongoing maintenance is provided which also assists in bringing in natural light and ventilation into the core of the building;
- innovative external shading in the form of green filigree provided to vertical screens has been provided along the western side of the building, along with balconies and windows which are recessed under the upper level slab;
- a higher level of apartment amenity is provided through the provision of private open space mostly in excess of minimum requirements;
- All habitable rooms and common circulation areas have access to natural light and ventilation.

In consideration of all the above, we have formed the opinion that the height of the proposed building is acceptable from an urban form perspective and warranted through the incorporation of high quality design features.

## 5.3 Building Appearance and Design

For ease of assessment, we have grouped the relevant Development Plan provisions relating to Building appearance and design under the following key themes:

- ground plane;
- relationship with heritage places;
- car parking;
- landscaping;
- materials;
- building appearance; and
- service areas and site facilities.

### 5.3.1 Ground Plane

*High Street Unley Policy Area 20*

***PDC 1*** *Development should provide continuity of predominately narrow small ground floor shops, and limited offices and other non-residential land uses along the road corridor at ground level or first floor level, and residential development above.*

*PDC 3* *Shops or group of shops contained in a single building should have a maximum gross leasable area in the order of 450 square metres (per tenancy).*

*PDC 6* *The ground floor of buildings should be built to dimensions including a minimum floor to ceiling height of 3.5 metres to allow for adaptation to a range of land uses including retail, office and residential without the need for significant change to the building.*

*PDC 7* *A minimum of 50 per cent of the ground floor primary frontage of buildings should be visually permeable, transparent or clear glazed to promote active street frontages and maximise passive surveillance.*

*PDC 8* *Buildings should maintain a pedestrian scale at street level, and on land identified on Concept Plan Maps Un/1, 2A and 2B, should:*

*(a) include a clearly defined podium or street wall fronting the High Street (Unley Road) Policy Area 20 main road and side streets where appropriate, of a height consistent with traditional one and two storey facades and no greater than two storeys or 8.5 metres in height;*

*(b) have levels above the defined podium or street wall setback a minimum of 3 metres from that wall.*

*Design and Appearance*

*PDC 16* *In mixed use and medium and high density residential areas, development facing the street should be designed to provide interesting and pedestrian friendly street frontages by:*

*(a) including features such as frequent doors and display windows, retail shopfronts and/or outdoor eating or dining areas;*

*(b) minimising the frontage for fire escapes, service doors, plant and equipment hatches;*

*(c) avoiding undercroft, semi-basement or ground floor vehicle parking that is visible from the primary street frontage;*

*(d) using colour, vertical and horizontal elements, roof overhangs and other design techniques to provide visual interest and reduce massing.*

*PDC 17* *Where zero or minor setbacks are desirable, development should incorporate shelter over footpaths to enhance the quality of the pedestrian environment.*

*Medium and High Rise Development*

*PDC 11* *To contribute to direct pedestrian access and street level activation, the finished ground level of buildings should be no more than 1.2 metres above the level of the footpath, except for common entrances to apartment buildings which should be at ground level or universally accessible.*

The narrow-fronted commercial tenancies proposed at ground level maintain the continuous row of shop frontages which characterise Unley Road, and seek to activate the development at pedestrian level. The carpark will be screened from the public, and residential apartments are proposed to be included at the upper levels behind a highly articulated façade. Respecting this, the overall building design satisfies Policy Area PDC 1.

It is envisaged that new development in the Urban Corridor Zone will deliver a high quality pedestrian environment (Design and Appearance PDC 16). The proposal seeks to achieve this through glazing along the entire commercial frontage at ground level, locating services and car parking behind the main face of the building, and including canopies to provide visual interest and pedestrian comfort. All these elements assist in creating a comfortable human scale and appearance at pedestrian level.

The defined podium to Unley Road of 8.6 metres in height (relative to two storeys) will contribute positively to a high quality pedestrian scale and assist with integrating the development into its existing context. Behind this podium, the balcony of Level 2 is setback approximately 2 metres and the façade of the building is setback 5 metres. Although not strictly consistent with the minimum 3 metre setback prescribed by Policy Area PDC 8(b), the contrast between the stonework in the podium and stained pre-cast concrete for the building will visually strengthen the appearance of the podium and assist in creating the distinct separation this principle seeks to achieve.

In addition to the above, the proposal achieves the following:

- the floor areas for each commercial/retail tenancy is less than 450 square metres (Policy Area PDC 17);
- the ground level includes a floor to ceiling height of 3.4 metres to permit a range of land uses without requiring major internal works (Policy Area PDC 6); and
- the proposed finished ground level will be no more than 1.2 metres above the level of the footpath (Medium and High Rise Development PDC 11).

### 5.3.2 Relationship with Heritage Places

*High Street Unley Policy Area 20*

***PDC 10*** *The integrity and spatial setting of a heritage place, and positive character facades, be respected by adjacent development providing appropriate setbacks, wall heights, format and features, and new and taller building elements being distinctly further setback and of lightweight subservient appearance.*

The proposed development is located a substantial distance from any heritage places and as such will not detrimentally effect the setting of those places.

The proposed development also respects buildings which contribute positively to the existing streetscape. The materials and proportions of the podium element and the recessed upper levels allow the building to respond and respect the existing and future urban contexts.

### 5.3.3 Car parking

*Urban Corridor Zone*

***PDC 6*** *Vehicle parking should be located to the rear of development or not be visible from public land along the primary road frontage.*

*Transportation (Movement of People and Goods)*

***PDC 28*** *Vehicle parking spaces and multi-level vehicle parking structures within buildings should:*

*(a) enhance active street frontages by providing land uses such as commercial, retail or other non-car park uses along ground floor street frontages*

*(b) complement the surrounding built form in terms of height, massing and scale*

*(c) incorporate facade treatments along major street frontages that are sufficiently enclosed and detailed to complement neighbouring buildings consistent with the desired character of the locality.*

***PDC 32*** *Landscaping should be provided and maintained in order to screen, shade and enhance the appearance of car parking areas. To this end, grade level car parking areas should not be located closer than two metres to the street alignment and 1.2 metres to the common boundary of adjoining property located within a residential zone.*

Vehicle parking is accessible via Hart Avenue, and is located at ground level (behind the commercial/retail tenancies) and at basement level. The parking areas will be adequately screened from public view and setback from the street and adjoining properties so as to not negatively impact upon the amenity of the Hart Avenue streetscape or occupants.

The proposed arrangement provides convenient vehicle parking for the building occupants whilst also permitting activation of the ground level frontage to Unley Road as envisaged by the Development Plan.

### 5.3.4 Landscaping

*Urban Corridor Zone*

***PDC 20*** *Development should incorporate landscaping as an integral part of the design of the development and include plants with a mature height, scale and form to complement and relate to that of the development.*

*Landscaping*

***PDC 1*** Landscaping of development should:

(a) be provided to soften the appearance of built form;

(b) complement the scale of the built form;

(c) be consistent with any particular desired character or important contextual features of the landscape setting in the locality;

(d) define spaces and edges;

(e) provide microclimate benefits such as shade and shelter;

(f) retain existing landscaping, where practicable;

(g) use species and techniques that require low water use and support and enhance local biodiversity;

(h) enhance the appearance of development, establish visual buffers to adjacent development and screen service, loading, outdoor storage and parking areas.

*Medium and High Rise Development*

*PDC 21* *Green roofs (which can be a substitute for private or communal open space provided they can be accessed by occupants of the building) are encouraged for all new residential commercial or mixed use buildings.*

*PDC 23* *Deep soil zones should be provided to retain existing vegetation or provide areas that can accommodate new deep root vegetation, including tall trees with large canopies.*

*One way of achieving this is in accordance with the following table:*

| Site area | Minimum deep soil area | Minimum dimension | Tree/ deep soil zones |
|---|---|---|---|
| <300m$^2$ | 10m$^2$ | 1.5 metres | 1 small tree / 10m$^2$ deep soil |
| 300-1500m$^2$ | 7% site area | 3 metres | 1 medium tree / 30m$^2$ deep soil |
| >1500m$^2$ | 7% site area | 6 metres | 1 large or medium tree / 60m$^2$ deep soil |
| **Tree size and site area definitions** | | | |
| Small tree: | < 6 metres mature height and < less than 4 metres canopy spread | | |
| Medium tree: | 6-12 metres mature height and 4-8 metres canopy spread | | |
| Large tree: | 12 metres mature height and > 8 metres canopy spread | | |
| Site area: | The total area for development site, not average area per dwelling | | |

*PDC 24* *Deep soil zones should be provided with access to natural light to assist in maintaining vegetation health.*

Landscaping is envisaged to be an integral part of the design of new development to complement the built form and landscape character, improve environmental performance and sustainability, promote safety and causal surveillance, and/or provide a landscaping buffer.

No front setback is envisaged for the subject site (as this is the consistent development pattern for the majority of Unley Road). The proposal therefore seeks to link the greenery of the existing street tree canopies north and south of the subject site through the use of façade greening to the horizontal podium mass. Additional green filigree provided to vertical screens on the tower facade assist with softening the development's mass and presence within the Unley Road streetscape.

In addition, the communal courtyard provided centrally within the proposed building is anticipated to deliver an extensively landscaped, high quality area for the shared enjoyment of building occupants and visitors.

Specifically in relation to Landscaping PDC 1, the landscaping included in the proposed development achieves the following:

- the proposal enhances the attractive site attributes by linking the greenery of the existing street tree canopies north, south and west of the subject site with greening treatment to the podium;
- the communal courtyard area is subject to casual surveillance from the upper levels, whilst garden beds located around the perimeter and bordering entry zones to doors provide a sense of privacy through screening, and also a sense of (green) enclosure to the communal area;
- the green filigree provided to vertical screens will assist with the shading and cooling of the building, therefore assisting in the overall sustainability of the development; and
- the Level 1 courtyard includes attractive and coordinated seating which is suitable for individual or group use for either formal or informal activities.

Despite the fact that the proposed development does not include landscaping at ground level or deep soil areas, we believe that proposed landscaping, stormwater arrangements and energy efficiency more than satisfy the intention of this provision.

We note that, green roofs are encouraged in new developments as they can be suitable for private or communal open space. Although the proposed communal courtyard area is not technically a green roof, it remains to provide an extensively landscaped shared area of high amenity for use by the building occupants. Respecting this, and given the proximity of the subject site to public open space and recreational areas, inclusion a green roof is not considered necessary for this particular development.

Respecting the above, we believe that the proposed development has appropriately included landscaping as an integral part of the building design.

### 5.3.5 Materials

*Design and Appearance*

***PDC 3*** *The external walls and roofs of buildings should not incorporate highly reflective materials which will result in glare to neighbouring properties, drivers or cyclists.*

*Medium and High Rise Development*

***PDC 6*** *Materials and finishes should be selected to be durable and age well to minimise ongoing maintenance requirements. This may be achieved through the use of materials such as masonry, natural stone, prefinished materials that minimise staining, discolouring or deterioration, and avoiding painted surfaces particularly above ground level.*

High quality and durable materials have been selected for the building both internally (stone, timber, glass) and externally (stone, metal screening and cladding, steel, pre-cast concrete) to ensure that a low level of maintenance is required to ensure the long term preservation of the building's appearance (Medium and High Rise Development PDC 6). Further, these materials will not be overly luminous so as to result in glare to neighbouring properties, drivers or cyclists (Design and Appearance PDC 3).

### 5.3.6 Building Appearance

*Design and Appearance*

***PDC 4*** *Structures located on the roofs of buildings to house plant and equipment should be screened from view to the street and adjacent building viewing points (existing or envisaged) and should form an integral part of the building and roof top design in relation to creating an attractive appearance, external finishes and colours.*

***PDC 11*** *Permanently fixed external screening devices should be designed and coloured to complement the associated building's external materials and finishes.*

***PDC 14*** *Buildings should be designed and sited to avoid extensive areas of uninterrupted walling facing areas exposed to public view.*

*Medium and High Rise Development*

***PDC 1*** *Buildings should be designed to respond to key features of the prevailing local context within the same zone as the development. This may be achieved through design features such as vertical rhythm, proportions, composition, material use, parapet or balcony height, and use of solid and glass.*

***PDC 3*** *Windows and doors, awnings, eaves, verandas or other similar elements should be used to provide variation of light and shadow and contribute to a sense of depth in the building façade.*

***PDC 7*** *Balconies should be integrated into the overall architectural form and detail of the development and should:*

*(a) utilise sun screens, pergolas, louvres and openable walls to control sunlight and wind;*

*(b) be designed and positioned to respond to daylight, wind, and acoustic conditions to maximise comfort and provide visual privacy;*

*(c) allow views and casual surveillance of the street while providing for safety and visual privacy of nearby living spaces and private outdoor areas;*

*(d) be of sufficient size, particularly depth, to accommodate outdoor seating.*

*PDC 8* *Development facing the street should be designed to provide attractive, high quality and pedestrian friendly street frontage(s) by:*

*(a) incorporating active uses such as shops or offices, prominent entry areas for multi-storey buildings (where it is a common entry), habitable rooms of dwellings, and areas of communal public realm with public art or the like, where consistent with the zone and/or policy area provisions;*

*(b) providing a well landscaped area that contains a deep soil zone space for a medium to large tree in front of the building (except in a High Street Policy Area or other similar location where a continuous ground floor façade aligned with the front property boundary is desired). One way of achieving this is to provide a 4 metre x 4 metre deep soil zone area in front of the building;*

*(c) designing building façades that are well articulated by creating contrasts between solid elements (such as walls) and voids (for example windows, doors and balcony openings);*

*(d) positioning services, plant and mechanical equipment (such as substations, transformers, pumprooms and hydrant boosters, car park ventilation) in discreet locations, screened or integrated with the façade;*

*(e) ensuring ground, semi-basement and above ground parking does not detract from the streetscape;*

*(f) minimising the number and width of driveways and entrances to car parking areas to reduce the visual dominance of vehicle access points and impacts on pedestrian areas.*

*PDC 10* *Entrances to multi-storey buildings should:*

*(a) be oriented towards the street;*

*(b) be visible and clearly identifiable from the street, and in instances where there are no active or occupied ground floor uses, be designed as a prominent, accentuated and welcoming feature;*

*(c) provide shelter, a sense of personal address and transitional space around the entry;*

*(d) provide separate access for residential and non-residential land uses;*

*(e) be located as close as practicable to the lift and/or lobby access;*

*(f) avoid the creation of potential areas of entrapment.*

The proposed building responds to its context by including a podium element which respects the existing low scale development and includes materials which complement those existing in the locality. The development will also revitalise the pedestrian experience along Hart Avenue and Unley Road through the inclusion of active ground floor commercial/retail tenancies and presentation of a visually interesting, highly articulated building that is unified in its expression across all facades.

In addition to the above, the proposal:

- will not present extensive areas of uninterrupted walling to public spaces, nor will walls and/or roofs be constructed with materials which may result in unreasonable glare to neighbouring properties, drivers or cyclists (Design and Appearance PDC 14);
- provides structures on the roof which have been thoughtfully included in the roof design and which will not be visible from the street (Design and Appearance PDC 4);
- incorporates screening devices that are integrated as part of the overall building design and will comprise of durable, low maintenance materials (Design and Appearance PDC 11);
- provides windows and balconies which have been located and designed to create visual interest offering a play of light and shadow which will contribute to the sense of depth to the building (Medium and High Rise Development PDC 3);
- integrates balconies into the overall architectural form of the building and located so as to ensure adequate sunlight, shading, wind exposure and views in order to create high amenity, comfort, functionality and visual privacy for future residents (Medium and High Rise Development PDC 7); and
- separates the main public and private building entrances which are clearly identifiable through the clever use of materials and built form. Further, they will be practically located near lifts and stairwells, avoid entrapment areas and provide shelter (Medium and High Rise Development PDC 10).

### 5.3.7 Services and Site Facilities

*Design and Appearance*

***PDC 18*** *Outdoor storage, loading and service areas should be:*

*(a) screened from public view by a combination of built form, solid fencing and/or landscaping;*

*(b) conveniently located and designed to enable the manoeuvring of service and delivery vehicles;*

*(c) sited away from sensitive land uses.*

*Residential Development*

***PDC 52*** *Site facilities for group dwellings and residential flat buildings should include:*

*(a) a common mailbox structure located close to the major pedestrian entrance to the site;*

*(b) garbage and recyclable material storage areas; and*

*(c) for dwellings which do not incorporate ground level private open space:*

*(i) an external clothes drying area; and*

*(ii) a safe and secure bicycle storage and parking area;*

*which are readily accessible to each dwelling and complement the development and streetscape character.*

The proposed development has appropriately located services, storage areas and waste storage areas and site facilities (i.e. mailboxes) so as to be accessible and convenient for all building occupants, and not impact upon the amenity of neighbouring developments. Further, adequate space has also been provided for external clothes drying on balconies and bicycle storage in the basement parking areas.

We have formed the opinion that the proposed development has been appropriately designed in relation to its existing context, as well as the envisaged future context for the Urban Corridor Zone.

## 5.4 Setbacks

*Urban Corridor Zone*

***PDC 14*** *Buildings (excluding verandahs, porticos and the like) should be set back from the primary road frontage (exclusive of any land required under the Metropolitan Road Widening Act) in accordance with the following parameters*

| Policy Area | Minimum setback from the primary road frontage |
|---|---|
| High Street (Unley Road) Policy Area 20 | No minimum (3 metre maximum setback where extended outdoor dining/licensed area only is proposed forward of the building) |

***PDC 15*** *Buildings (excluding verandahs, porticos and the like) should be set back from the secondary road frontage or a vehicle access way in accordance with the following parameters:*

| Policy Area | Minimum setback from secondary road | Minimum setback from rear access way |
|---|---|---|
| High Street Policy Area | 0 metres for a distance of 20 metres from the primary road junction and 2 metres thereafter | No minimum where the access way is 6.5 metres or more<br>OR<br>Where the access way is less than 6.5 metres in width, the distance equal to the additional width required to make the access way 6.5 metres or more, to provide adequate manoeuvrability for vehicles |

***PDC 16*** *Buildings (excluding verandahs, porticos and the like) should be set back in accordance with the following parameters:*

| Designated Area | Minimum setback from rear allotment boundary | Minimum setback from side boundaries (where not on a road boundary) |
|---|---|---|
| High Street Policy Area | 5 metres where the subject land directly abuts an allotment of a different zone<br>3 metres in all other cases, except where the development abuts the wall of an existing or simultaneously constructed building on the adjoining land. | 0 metres |

The Unley (City) Development Plan provides the following setback guidelines for the subject site:

- Unley Road – 0 metres;
- Hart Avenue – 0 metres for a distance of 20 metres from the primary road junction and 2 metres thereafter;
- Southern boundary – 0 metres; and
- Western Boundary – 3 metres.

The proposed development generally satisfies the above setback requirements and achieves the desired character for High Street Policy Area.

The secondary setback proposed from Hart Avenue is not setback 2 metres after a distance of 20 metres from the intersection with Unley Road. We have formed the opinion that the lack of setback is not detrimental to the proposal in this instance as the ground level beyond 20 metres from the primary frontage at Unley Road, is generally open (being the undercroft car park). Further west, a private rear access creates additional separation between the proposed development and the neighbouring residential allotment which is also located within the Urban Corridor Zone.

In our opinion, the proposal achieves the intent of the setback guideline, which is to step back secondary frontages towards the gradually deeper front setbacks which characterise the Residential Zone. We believe a 2 metres setback would be necessary if the subject site adjoined an allotment within the Residential Zone, however the future redevelopment of the adjacent western property will act as the transition development between the proposal and the Residential Streetscape (Built Form) Zone to its immediate west.

## 5.5 Apartment Design

*Residential Development*

***PDC 20*** *Private open space should be provided for each dwelling and sited and designed to be:*

*(a) located adjacent or behind the primary street facing building facade and be exclusive of storage areas, outbuildings, carports, driveways, parking spaces and roofed pergolas and associated structures;*

*(b) screened from public areas and adjoining properties with fencing of not less than 1.8 metres above finished ground level;*

*(c) sited to receive direct winter sunlight;*

*(d) of sufficient area with a minimum of 20 percent of the site area (>300 square metre site area per dwelling) and 35 square metres (≤300 square metres site area per dwelling) within a residential zone and 20 square metres for each site within a non-residential zone;*

*(e) useable for residents and visitors with a minimum of 4 metres (residential zone) and 3 metres (non-residential zone) in any one direction, a maximum grade of 1:10, and directly accessible from a habitable room.*

*PDC 21* *Communal open space shared by more than one dwelling should be provided on-site for medium and higher density development without direct access to ground level private outdoor living areas and sited and designed to be:*

*(a) screened from public areas and adjoining properties by fencing to a height of no less than 1.8 metres above finished ground level;*

*(b) capable of receiving direct winter sunlight and good natural daylighting;*

*(c) only located on elevated gardens or roof tops where acoustic, safety, visual privacy and amenity issues have been addressed;*

*(d) of sufficient area with no less than 25 square metres for each dwelling (residential zone) and 15 square metres for each dwelling (non-residential zone) in combination with indoor communal facilities provided to supplement the primary outdoor living spaces;*

*(e) safe, convenient and usable space for residents and visitors with a minimum dimension of 4 metres (residential zone) and 3 metres (non-residential zone) in any one direction.*

*PDC 22* *Private and communal open space may also include balcony areas, roof patios and similar structures provided the area:*

*(a) is screened to 1.7 metres high;*

*(b) has a minimum dimension of 2 metres;*

*(a) has at least 70 percent uncovered by roofed structures.*

*Medium and High Rise Development*

*PDC 14* *Residential buildings (or the residential floors of mixed use buildings) should have habitable rooms, windows and balconies designed and positioned with adequate separation and screening from one another to provide visual and acoustic privacy and allow for natural ventilation and the infiltration of daylight into interior and outdoor spaces.*

*One way of achieving this is to ensure any habitable room windows and/or balconies are separated by at least 6 metres from one another where there is a direct 'line of sight' between them and be at least 3 metres from a side or rear property boundary. Where a lesser separation is proposed, alternative design solutions may be applied (such as changes to orientation, staggering of windows or the provision of screens or blade walls, or locating facing balconies on alternating floors as part of double floor apartments), provided a similar level of occupant visual and acoustic privacy, as well as light access, can be demonstrated.*

*PDC 15* *Living rooms should have a satisfactory short range visual outlook to public or private open space.*

| | |
|---|---|
| *PDC 16* | *Buildings comprising more than 10 dwellings should provide a variety of dwelling sizes and a range in the number of bedrooms per dwelling.* |
| *PDC 18* | *Dwellings with 3 or more bedrooms, should, where possible, have the windows of habitable rooms overlooking internal courtyard space or other public space.* |
| *PDC 25* | *Dwellings should provide a covered storage area of not less than 8 cubic metres in one or more of the following areas:*<br>*(a) in the dwelling (but not including a habitable room)*<br>*(b) in a garage, carport, outbuilding or an on-site communal facility and be conveniently located and screened from view from streets and neighbouring properties*. |

Residential apartments should be designed and sited to provide a high level of amenity for occupants through the inclusion of adequate private open space, storage and flexibility in internal floor areas. The proposed development includes a range of 1, 2 and 3 bedroom apartments, with some also including a 'study' which can be used for a variety of functions. The sliding doors featured to these rooms further enhance the adaptability of these spaces. It should also be considered that all apartments have the potential to be amalgamated to form larger apartments, if required.

We note that there are no prescribed minimum areas for apartment types and therefore the suitability of the proposed areas will be determined by the ability of apartments to deliver high quality internal living areas such as maximising natural light and ventilation penetration, providing an adequate level of internal storage space and access to private open space of sufficient area to satisfy likely occupant needs.

All habitable rooms will receive natural light and are capable of being naturally ventilated. Each apartment has direct access to private open space in the form of balconies of between 7 square metres and 86 square metres in area. Residential Development PDC 20 prescribes that 20 square metres of private open space should be provided to each dwelling of under 300 square metres in floor area, within a non-residential zone. Where this space is provided in the form of a balcony area, Residential Development PDC 22 recommends that these spaces should have a minimum dimension of 2 metres, be screened to 1.7 metres high, and have at least 70 percent of the area uncovered.

Although some of the balconies are less than 20 square metres in area and do not include screening to the prescribed height, we have formed the opinion that the location of the development in the Urban Corridor Zone; its relationship to surrounding dwellings; and the overall amenity, orientation, outlook, dimensions, and connectivity of these spaces to internal rooms will achieve the high quality and functional areas envisaged. As such, we believe that private open space has been well designed.

These apartments also have access to the high quality communal courtyard area which could can accommodate individual needs, as well as small gatherings whether formal or informal in nature. With respect to Residential Development PDC 21, the communal open space will:

- not be visible from adjacent sites or public areas;
- will be capable of receiving direct winter sunlight and natural daylighting; and
- will be a safe, convenient, functional space of adequate dimensions for use by residents and visitors.

Accessible public open space also exists in the locality should occupants require more substantive open space for leisure and/or recreational activities.

Respecting the above, we have formed the opinion that the proposal achieves the minimum apartment standards and private open space requirements to achieve a high standard of amenity.

Internal and external storage of between 6 cubic metres and 10 cubic metres in total is provided to each apartment (excluding storage located in habitable rooms). In addition to this, apartments provided with a study have the ability to utilise this space for additional storage (should it be required), and further, the large living areas allow adequate space for furniture which would enable future occupants to customise their storage needs. In light of this, we have formed the opinion that the provision of storage to each apartment is adequate.

We consider the proposed apartments to be of a high quality design standard and of suitable areas to satisfy likely occupant needs. Accordingly, we are of the opinion that the proposed development satisfies the expectations outlined by the relevant provisions of the Development Plan.

## 5.6 Parking, Access and Traffic

Phil Weaver and Associates were engaged by the applicant to assess the proposed vehicle parking arrangements, as well as the potential impacts of the development on the existing traffic network (report included in Appendix 4).

For ease of assessment, we have grouped the relevant Development Plan provisions relating to parking, access and traffic under the following key themes:

- car parking;
- bike parking;
- traffic and access; and
- servicing.

### 5.6.1 Car Parking

*Urban Corridor Zone*

***PDC 20*** *Vehicle parking should be provided in accordance with the rates set out in Table Un/5 - Off Street Vehicle Parking Requirements or Table Un/5A - Off Street Vehicle Parking Requirements for Designated Areas (whichever applies)*

*Transportation (Movement of People and Goods)*

***PDC 24*** *Development providing 25 or more car parking spaces should provide at least one car parking space in every 25 spaces for the use of the disabled, up to a maximum of five spaces. (See Table Un/5).*

***PDC 25*** *Parking for the disabled should be allocated and located within a short distance and convenient to major building entrances, ramps and other pedestrian access facilities useable by disabled people.*

*PDC 28* *Vehicle parking spaces and multi-level vehicle parking structures within buildings should:*

*(a) enhance active street frontages by providing land uses such as commercial, retail or other non-car park uses along ground floor street frontages;*

*(b) complement the surrounding built form in terms of height, massing and scale;*

*(c) incorporate facade treatments along major street frontages that are sufficiently enclosed and detailed to complement neighbouring buildings consistent with the desired character of the locality.*

*PDC 29* *In mixed use buildings, the provision of vehicle parking may be reduced in number and shared where the operating hours of commercial activities complement the residential use of the site.*

Urban Corridor Zone PDC 20 suggests that vehicle parking should be provided in accordance with the rates set out in *Table Un/5 - Off Street Vehicle Parking Requirements* or *Table Un/5A - Off Street Vehicle Parking Requirements for Designated Areas*. The relevant table (Table Un/5A) depicts a vehicle parking rate for non-residential development in the Urban Corridor Zone, however does not identify a residential parking rate. We have therefore considered the residential car parking rate recommended for mixed use developments located in non-residential zones in *Table Un/5 - Off Street Vehicle Parking Requirements*.

Table Un/5A suggests that non-residential development in the Urban Corridor Zone should be provided with a minimum of 3 vehicle parking spaces per 100 square metres of gross leasable floor area. As there is a total of 580 square metres of commercial/retail floor area proposed, 18 spaces are required. These can be accommodated within the ground level car parking area. In addition, the proposed development has also provided one conveniently located car parking space for use by disabled persons (Transportation PDC 24 and PDC 25).

The residential component of the proposed development generates the following car parking demands:

- 20 apartments under 75 square metres in floor area = 15 car parking spaces (0.75 x 20);
- 35 apartments over 75 square metres, but under 150 square metres in floor area = 43.75 car parking spaces (1.25 x 35);
- 4 apartments over 150 square metres in floor area = 7 car parking spaces (1.75 x 4); and
- 14.75 visitor car parking spaces in total (0.25 x 59).

A total of 66 residential car parking spaces are to be provided in addition to the 15 car parking spaces for residential visitors. 60 residential car spaces are proposed to be accommodated in the basement levels, and the remaining 6 spaces are proposed to be accommodated in the ground floor car parking area.

In relation to the residential visitor car parking spaces, we believe that it is appropriate in this instance for these spaces to be shared with the non-residential component. These 20 car spaces are capable of being shared due to complementary peak periods associated with non-residential and residential land uses as envisaged by Transportation PDC 29.

Having regard to the location of the subject site in an Urban Corridor Zone, its proximity to bus services, the encouragement of cycling through provision of adequate bicycle parking and the potential for shared parking between the land uses of the building fronting Unley Road, we have formed the opinion that the parking provision for the development as a whole is acceptable.

The Traffic and Parking Assessment prepared by Phil Weaver also confirms that the car park design (including car parking space dimensions and aisle widths) is acceptable, satisfying the relevant Australian Standards.

Respecting the above, we are comfortable that the proposed development has provided sufficient onsite car parking to support the proposed land uses.

### 5.6.2 Bicycle Parking

*Transportation (Movement of People and Goods)*

***PDC 9*** *Development should encourage and facilitate cycling as a mode of transport by incorporating end-of-journey facilities including:*

*(a) showers, changing facilities and secure lockers*

*(b) signage indicating the location of bicycle facilities*

*(c) bicycle parking facilities provided at the rate set out in Table Un/6 – Off-street Bicycle Parking Requirements for Mixed Use and Corridor Zones.*

***PDC 10*** *On-site secure bicycle parking facilities should be:*

*(a) located in a prominent place;*

*(b) located at ground floor level;*

*(c) located undercover;*

*(d) located where surveillance is possible;*

*(e) well lit and well signed;*

*(f) close to well used entrances;*

*(g) accessible by cycling along a safe, well lit route.*

***PDC 11*** *Pedestrian and cycling facilities and networks should be designed and provided in accordance with relevant provisions of the Australian Standards and Austroads Guides.*

According to the bicycle parking rates set out in *Table Un/6 – Off-street Bicycle Parking Requirements for Mixed Use and Corridor Zones*, Mr Weaver has concluded that the proposed development is required to provide the following number of spaces (based on two commercial, and two retail tenancies):

- 30 spaces for residents;
- 10 spaces for residential visitors;

- Office: 3 spaces (i.e. 2 spaces for employees and 1 space for clients); and
- Retail: 2 spaces (i.e. 1 space for staff and 1 space for customers).

Respecting the above, the proposal needs to provide a total of 40 residential bicycle spaces and a total of 5 non-residential bicycle spaces.

Mr Weaver has outlined that the required visitor and commercial/retail bicycle parking can easily be accommodated using the 8 ground level spaces and 7 of the basement bicycle parking spaces. The remaining 21 spaces in the basement can be allocated for use by residents. In addition, the large apartment floor areas and the provision of a study to some apartments results in adequate space for the remaining 9 required bicycle parking spaces to be accommodated within the apartments.

In addition, if Council supports changes to the width of the Hart Avenue footpath, there may be further opportunities for bicycle parking in the public realm.

Both bicycle parking space locations external to apartments are secure, accessible and convenient for residents, visitors, and commercial/retail staff and customers.

We are comfortable that the proposed development is adequately provided with bicycle parking spaces.

### 5.6.3 Access and Traffic

*Urban Corridor Zone*

***PDC 10*** *Development should minimise the number of access points onto an arterial road, and where possible access points should be:*

*(a) from local streets (including rear lane access) as identified on Concept Plan Maps Un/1 to 7;*

*(b) shared between developments.*

***PDC 11*** *Vehicle access points on side streets and rear access ways should be located and designed to:*

*(a) minimise the impacts of headlight glare and noise on nearby residents;*

*(b) avoid excessive traffic flows into residential streets.*

*Transportation (Movement of People and Goods)*

***PDC 3*** *Development should:*

*(a) provide safe and convenient access for private cars, cyclists, pedestrians, service vehicles, emergency vehicles and public utility vehicles;*

*(b) include access points located and designed in such a way as to minimise traffic hazards, vehicle queuing on public roads and intrusion of vehicles into adjacent residential areas; and*

*(c) provide off-street loading, service and vehicle manoeuvring areas.*

*PDC 5* *Development should ensure that a permeable street and path network is established that encourages walking and cycling through the provision of safe, convenient and attractive routes with connections to adjoining streets, paths, open spaces, schools, pedestrian crossing points on arterial roads, public and community transport stops and activity centres.*

*PDC 13* *Development should be provided with safe and convenient access which:*

*(a) avoids unreasonable interference with the flow of traffic on adjoining roads*

*(b) provides appropriate separation distances from existing roads or level crossings*

*(c) accommodates the type and volume of traffic likely to be generated by the development or land use and minimises induced traffic through over-provision*

*(d) is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties.*

*PDC 21* *Car parking areas should:*

*(a) be located and designed in such a way as to ensure safe and convenient pedestrian access from vehicles to facilities; safe and convenient traffic circulation; include adequate provision for manoeuvring into and out of parking bays, and, in the case of centre-type development, result in minimal conflict between customer and service vehicles; and*

*(b) be designed so as to obviate the necessity for vehicles to back onto public roads.*

*PDC 30* *Undercroft and below ground garaging of vehicles should only occur where envisaged in the relevant zone or policy area or precinct and ensure:*

*(a) the overall height and bulk of the undercroft structure does not adversely impact on streetscape character of the locality or the amenity of adjacent properties*

*(b) vehicles can safely enter and exit from the site without compromising pedestrian or cyclist safety or causing conflict with other vehicles*

*(c) driveway gradients provide for safe and functional entry and exit*

*(d) driveways and adjacent walls, fencing and landscaping are designed to provide adequate sightlines from vehicles to pedestrians using the adjacent footpath*

*(e) openings to undercroft areas are integrated with the main building so as to minimise visual impact*

*(f) landscaping, mounding and/or fencing is incorporated to improve its presentation to the street and to adjacent properties*

(g) *the overall streetscape character of the locality is not adversely impaired (e.g. visual impact, building bulk, front setbacks relative to adjacent development).*

The Traffic and Parking Assessment Report undertaken by Mr Weaver reviews the estimated traffic flows associated with the proposed development. The report concludes that the development will result in only a minor increase in traffic utilising Hart Avenue and Unley Road.

Importantly, the report determines that the development will not result in a substantial change in the existing traffic flow or operation of Unley Road or Hart Avenue. The most significant delays resulting from the proposed development will relate to the waiting times for vehicles turning right from Unley Road onto Hart Avenue (increase by 0.2 seconds) or from Hart Avenue onto Unley Road. These estimated wait times reflect the worst case scenario. Mr Weaver has concluded that the anticipated wait times are acceptable.

Mr Weaver has also determined that the design of the vehicle car parking areas is generally in accordance with the relevant off-street car parking standards.

In addition to the above, the proposed development:

- will reduce the number of on-street car parking spaces available on Hart Avenue as a result of extending the existing crossovers, however visitor parking is provided within the subject site in excess of the minimum requirements;
- utilises access from a local street (Hart Avenue) as opposed to an arterial Road (Unley Road) (Zone PDC 10);
- avoids excessive headlamp glare and traffic flows into residential streets (Zone PDC 11); and
- includes ramps of acceptable grade, design and clearance; and
- promotes future shared access between Hart Avenue and the adjacent allotment to the south of the subject site.

Respecting the above, we are comfortable that the proposed access and traffic arrangements will not detrimentally impact the existing road network.

### 5.6.4 Servicing

*Transportation (Movement of People and Goods)*

*PDC 27* *Loading areas and designated parking spaces for service vehicles should:*

(a) *be provided within the boundary of the site*

(b) *not be located in areas where there is parking provided for any other purpose.*

The waste and recycling bins will be collected by a private waste contractor by reversing into the rear access adjacent to the proposed building from Hart Avenue. The private contractor will then load/collect waste, then exit the site in a forward direction. Figure 3 of the report shows the turning path diagram for a vehicle completing this movement. As shown, the movement can still be made whilst there are cars parked on the northern side of Hart Avenue.

This turning path is considered acceptable by Mr Weaver.

## 5.7 Crime Prevention

*Urban Corridor Zone*

*PDC 9* *To maintain sight lines between buildings and the street, and to improve safety through passive surveillance, solid fencing should not be constructed between the front building line and the primary or secondary street.*

*Crime Prevention*

*PDC 1* *Development should promote the personal safety of people by:*

*(a) enabling them to be seen, to see and to interpret their surrounds, through:*

*(i) adequate lighting;*

*(ii) clear sightlines;*

*(iii) the elimination of entrapment spots;*

*(iv) the design of buildings to overlook public space;*

*(v) the mixing of activities which facilitate more constant public use; and*

*(vi) appropriate use and design of landscaping and fencing; and*

*(a) enabling them to leave an area or seek assistance when in danger, through legible design and comprehensive signage.*

*PDC 2* *Development should promote the security of property by:*

*(a) clearly defining ownership and legitimate use of private, public and community space;*

*(b) minimising access between roofs, balconies and windows of adjacent buildings;*

*(c) avoiding the use of materials which are likely to be susceptible to damage and vandalism; and*

*(d) avoiding landscaping and fencing which may present a security risk by obscuring doors and windows.*

*Medium and High Rise Development*

*PDC 9* *Common areas and entry points of the ground floor level of buildings should be designed to enable surveillance from public land to the inside of the building at night.*

Council Wide PDC 24 outlines that development should maximise safety by encouraging clear lines of sight, using appropriate lighting, and designing buildings which do not include entrapment areas and which overlook public and communal streets. Onsite security can also be improved through clearly defining public and private spaces, use of robust materials not susceptible to damage or vandalism, and avoiding the use of obscuring landscaping and fencing in building design.

The built form, lighting, use of high quality materials, and casual surveillance promoted through the proposed design is anticipated to create an environment which deters crime. In our opinion, the proposed development achieves the intent of the Development Plan provisions through the following:

- promoting natural surveillance of the public realm (Unley Road and Hart Avenue) from upper level balconies;
- promoting passive surveillance internally from upper levels down into the central courtyard;
- glazing of the ground level commercial tenancies to ensure visibility to/from the street;
- enabling direct sightlines between Unley Road and the building entrance and lobby;
- avoiding any opportunities for concealment;
- entrance to the residential levels will be controlled with a key card or remote control, with visitor access being controlled by residents via an intercom system. This control promotes territoriality and a sense of ownership through the clear delineation between public and private areas;
- the use of robust and durable design features to discourage vandalism; and
- built form and signage clearly defining private and public areas.

As such, we have formed the opinion that the proposal satisfies the relevant provisions relating to crime prevention.

## 5.8 Environmental Considerations

### 5.8.1 Waste

*Form of Development*

***PDC 13*** *All non-residential development should be provided with adequate waste receptacles and waste storage areas which should be:*

*(a) conveniently located;*

*(b) screened from public view;*

*(c) distanced from any adjacent residential development; and*

*(d) of a total area in accord with the following ratio:*

*i. one square metre for each 30 square metres, or part thereof, of total floor area of the development up to 120 square metres total floor area.*

*ii. an additional one square metre for each 50 square metres, or part thereof, of total floor area of the development over 120 square metres total floor area; and*

*iii. an additional 1.5 square metres for a premises occupied by a restaurant or takeaway food premises to accommodate additional receptacles for their special needs*

*Medium and High Rise Development*

| | |
|---|---|
| *PDC 26* | *Development should provide a dedicated area for the on-site collection and sorting of recyclable materials and refuse, green organic waste and wash-bay facilities for the ongoing maintenance of bins. This area should be screened from view from public areas so as to not to detract from the visual appearance of the ground floor.* |
| *PDC 27* | *Where the number of bins to be collected kerbside is 10 or more at any one time, provision should be made for on-site commercial collection.* |
| *PDC 28* | *The size of lifts, lobbies and corridors should be sufficient to accommodate movement of bicycles, strollers, mobility aids and visitor waiting areas.* |

The Development Plan envisages waste arrangements which are adequate for the land uses they are to service. Specifically, waste should be stored in appropriately designed and located areas, and collected in an efficient and safe manner.

As outlined in the Proposal Description, RawTec have prepared a Waste Management Plan for the proposed development, as included in Appendix 5. It is proposed that the development will be serviced by private waste collection in line with Medium and High Rise Development PDC 27, and include an appropriately located waste storage area screened from the public, yet conveniently accessible for commercial tenants and residents in line with Form of Development PDC 13.

At previously mentioned, separate organic waste bins have not been accommodated within the development at this stage. Instead, the waste arrangements will be reassessed once the building is functioning, to determine the practicality of including organic waste as a separate stream. As the proposal includes separate bins for general waste and co-mingled recycling waste, along with a wash down area for the bins, we have formed the opinion that the proposal is reasonably consistent with PDC 26.

The Waste Management Plan also recommends the following, which are adopted in the proposal:

- provision for multiple waste streams including general waste and co-mingled recycling waste;
- a waste transfer pathway between the chute waste area and the stored waste area,
- a 4 metre clearance above the private laneway to the rear of the site to ensure adequate room for waste collection;
- a minimum floor to ceiling height of 3 metres in the chute waste room to accommodate the chute diversion; and
- a wash down area to control odour which is sloped to drain into sewer system, installed with a tap and mains supply of water, more than 2 metres by 2 metres in area, and slip resistant.

The proposed waste arrangements as recommended by RawTec are practical and consistent with the relevant Development Plan provisions. As such, we are have formed the opinion that the proposed development will be able to appropriately manage all anticipated waste streams.

### 5.8.2 Services

*Form of Development*

***PDC 12*** *Development should be capable of economic and effective servicing, including garbage collection and fire protection.*

Lucid Consulting Australia have prepared a Building Services Design Report for the proposed development, which has been included in Appendix 6. Lucid Consulting have concluded that the site has access to all relevant utilities and services including water, gas and sewer connections.

Lucid Consulting have confirmed the locations of all relevant meters, fire services, transformers, electrical risers, communications rooms, hydraulic services and switchboards.

The basement and ground floor carparks will be mechanically ventilated utilising carbon monoxide sensors and variable speed controls, and exhaust systems will also be provided to toilet, laundry, kitchen, plants, back of house facilities and amenity areas. Air conditioning will be supplied to each commercial tenancies and residential apartments, with units being located on balconies and in service rooms.

All required fire services are included in the proposed development, including fire hydrants, automatic sprinkler systems, smoke detection systems, fire hose reels and portable fire extinguishers.

Hydraulic services are also provided including a sanitary drainage system, trade waste drainage system, domestic cold water break tanks and boost pumps, central hot water plant, and hot/cold reticulation.

Respecting the above, the proposed development will be provided with adequate utilities and services.

### 5.8.3 Energy Efficiency

*Energy Efficiency*

***PDC 1*** *Development should provide for efficient solar access to buildings and open space all year around.*

***PDC 2*** *Buildings should be sited and designed:*

*(a) to ensure adequate natural light and winter sunlight is available to the main activity areas of adjacent buildings;*

*(b) so that open spaces associated with the main activity areas face north for exposure to winter sun;*

*(c) to allow for cross ventilation and natural cooling of buildings and zoning of building layouts to enable main living room areas to be separately heated and cooled;*

*(d) to incorporate roof top gardens and green 'living' walls, particularly for multi-storey and large developments, to reduce the 'urban heat island effect';*

*(e) to use energy efficient building materials or the re-use of existing materials (embodied energy).*

*PDC 3* *Development should facilitate the efficient use of photovoltaic cells and solar hot water systems by:*

*(a) taking into account overshadowing from neighbouring buildings;*

*(b) designing roof orientation and pitches to maximise exposure to direct sunlight.*

*Medium and High Rise Development*

*PDC 20* *Multi-storey buildings should:*

*(a) minimise detrimental micro-climatic and solar access impacts on adjacent land or buildings, including effects of patterns of wind, temperature, daylight, sunlight, glare and shadow;*

*(b) incorporate roof designs that enable the provision of photovoltaic cells and other features that enhance sustainability (including landscaping).*

Multi-storey developments are encouraged to reduce their detrimental micro-climatic impacts through building design. Further, developments should also include sustainable initiatives such as solar hot water and photovoltaic cells.

According to the ESD Report prepared by D Squared Consulting (included in Appendix 7), the proposal has been designed to achieve a 7 National House Energy Rating (NatHERS), through passive design and use of good quality building materials. The ESD initiatives listed in the Proposal Description will ensure the long-term sustainability of the building by reducing the building's reliance on mechanical heating/cooling, using energy efficient appliances and air conditioners, enabling the reuse of energy and stormwater, and using locally sourced, highly recycled, low embodied energy building materials.

We have formed the opinion that these adaptable initiatives go above and beyond what is required by the Development Plan. As such, we believe the proposal exceeds the standard in relation to energy efficiency and sustainable design.

### 5.8.4 Overshadowing

*Design and Appearance*

*PDC 9* *The design and location of buildings should enable direct winter sunlight into adjacent dwellings and private open space and minimise the overshadowing of:*

*(a) windows of habitable rooms;*

*(b) upper-level private balconies that provide the primary open space area for a dwelling;*

*(c) solar collectors (such as solar hot water systems and photovoltaic cells).*

The Shadow Study drawing prepared by Tectvs and contained in Appendix 11 identify the extent of overshadowing associated with the proposed development during the winter and summer solstices.

It is clear from these drawings that the shadows will not prevent sunlight access to habitable rooms and/or private open space of surrounding dwellings. The shadow of the proposed building is predominately cast over existing commercial buildings, carparks and Unley Road.

Specifically, the dwelling at 3 Hart Avenue (located within the Urban Corridor Zone) is most affected at 9:00am during the winter solstice (21 June), with over half of the private open space in the shadow of the proposed development. This situation improves throughout the day where by 12:00 noon the shadow has well and truly receded.

We note that 6 Opey Avenue is also affected by overshadowing at 9:00am during the winter solstice, however the shadow is cast predominately over existing structures in the rear yard of this site. Similarly, this situation improves significantly during the course of the day, and as such, is not considered unreasonable.

The shadow of the proposed development covers the beer garden of the Cremorne Hotel completely from 3:00pm during the winter solstice. However, throughout the morning and the majority of the early afternoon, the area will receive almost full sunlight. This, along with the fact that the Cremorne Hotel is a commercial use (therefore exempt from the overshadowing provisions), is not fatal to the overall merits of the proposal.

Respecting the above, the extent of overshadowing created by the proposal will not have an unreasonable impact on the amenity of the locality or surrounding residential dwellings.

### 5.8.5 Overlooking

*Design and Appearance*

*PDC 10* *Development should minimise direct overlooking of the habitable rooms and private open spaces of dwellings through measures such as:*

*(a) appropriate site layout and building orientation;*

*(b) off-setting the location of balconies and windows of habitable rooms with those of other buildings so that views are oblique rather than direct to avoid direct line of sight;*

*(c) building setbacks from boundaries (including building boundary to boundary where appropriate) that interrupt views or that provide a spatial separation between balconies or windows of habitable rooms;*

*(d) screening devices (including fencing, obscure glazing, screens, external ventilation blinds, window hoods and shutters) that are integrated into the building design and have minimal negative effect on residents' or neighbours' amenity.*

*Residential Development*

***PDC 38*** *Direct overlooking from upper level (above ground floor level) habitable room windows and external balconies, roof patios, terraces and decks to habitable room windows and useable private open space of other dwellings should be minimised through adoption of one or more of the following:*

*(a) building layout;*

*(b) location and design of windows, balconies, roof patios and decks;*

*(c) screening devices;*

*(d) adequate separation distances;*

*(e) existing landscaping and supplementary screen tree planting.*

Overlooking is encouraged to be prevented between existing and proposed buildings through the use of building layout, location and design of windows and balconies, screening devices, landscaping and adequate separation between developments (Residential Development PDC 38).

The proposed development has been designed to be separated from the existing dwelling at 3 Hart Avenue, in order to prevent overlooking to a significant degree. At the upper levels, the building has been further setback to increase this separation as the height of the proposed building increases. The building itself is separated from the neighbouring Residential Streetscape (Built Form) Zone a minimum of 30.4 metres, with the majority of the building (to balconies) setback 32.4 metres. This considerable distance is anticipated to alleviate any potential issues relating to overlooking.

In addition, the existing landscaping in the locality (and specifically that surrounding the private open space at 3 Hart Avenue) will also mitigate overlooking.

Respecting the above, we do not consider the potential for overlooking from the proposed development unacceptable, or detrimental to the amenity of 3 Hart Avenue.

### 5.8.6 Stormwater

***PDC 5*** *Development should be designed to maximise conservation, minimise consumption and encourage reuse of water resources.*

***PDC 9*** *Development should include stormwater management systems to protect it from damage during a minimum of a 1-in-100 year average return interval flood.*

***PDC 10*** *Development should have adequate provision to control any stormwater over-flow runoff from the site and should be sited and designed to improve the quality of stormwater and minimise pollutant transfer to receiving waters.*

***PDC 11*** *Development should include stormwater management systems to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure the carrying capacities of downstream systems are not overloaded.*

*PDC 12* *Development should include stormwater management systems to minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system.*

*PDC 14* *Stormwater management systems should:*

*(a) maximise the potential for stormwater harvesting and re-use, either on-site or as close as practicable to the source;*

*(b) utilise, but not be limited to, one or more of the following harvesting methods:*

*i. the collection of roof water in tanks;*

*ii. the discharge to open space, landscaping or garden areas, including strips adjacent to car parks;*

*iii. the incorporation of detention and retention facilities;*

*iv. aquifer recharge.*

*PDC 15* *Where it is not practicable to detain or dispose of stormwater on site, only clean stormwater runoff should enter the public stormwater drainage system.*

Structural Systems Pty Ltd were engaged to prepare a stormwater management report for the proposed development. A copy of this report has been included in Appendix 8.

Structural Systems identified in their report that the proposed development results in a minor increase in impervious area and peak flow rate in the proposed development, as compared to the existing situation on site.

In order to satisfy Council's stormwater requirements, the report recommends the following:

- inclusion of an above ground 22,000 litre retention tank (or a combination of a 10,000 litre and 14,000 litre tank) or to capture and reuse runoff on site, as well as mitigate the discharge rate;
- inclusion of five outlet points (two directing stormwater to the Unley Road street water table and three outlets to the Hart Avenue water table); and
- water quality improvement systems are to be installed in all grated sumps to capture the target contaminants.

These recommendations have been adopted by the proposed development and are shown in the plans and drawings prepared by Tectvs. The proposed stormwater management plan achieves the following:

- reduces the pre-development (existing) peak stormwater flows and improves flood management;
- enables stormwater detention, retention, and re-use within the site (for irrigation of landscaping); and
- improvement of stormwater quality from surface and ground water runoff.

Further to the above, D Squared also conclude in the ESD report that the proposed development is expected to have an annual water usage of approximately 30 percent of a standard NCC compliant dwelling.

Respecting the above, we believe that the proposal satisfies the relevant development plan provisions in relation to stormwater management.

### 5.8.7 Wind

*Medium and High Rise Development*

***PDC 22*** *Development of 5 or more storeys, or 21 metres or more in building height (excluding the rooftop location of mechanical plant and equipment), should be designed to minimise the risk of wind tunnelling effects on adjacent streets by adopting one or more of the following:*

*(a) a podium at the base of a tall tower and aligned with the street to deflect wind away from the street;*

*(b) substantial verandas around a building to deflect downward travelling wind flows over pedestrian areas;*

*(c) the placement of buildings and use of setbacks to deflect the wind at ground level.*

The proposal has adopted the following measures to minimise the risk of wind tunnelling effects:

- a podium at the base which is aligned with the street to deflect wind away from the street;
- canopies to ground level facades fronting Unley Road and Hart Avenue to deflect downward travelling wind flows over pedestrian footpaths; and
- use of balconies and building articulation.

Respecting this, we are satisfied that the proposed development adequately mitigates the potential for wind tunnelling at lower/pedestrian levels.

### 5.8.8 Noise

*Overlay – Noise and Air Emissions*

***PDC 1*** *Noise and air quality sensitive development located adjacent to high noise and/or air pollution sources should:*

*(a) shield sensitive uses and areas through one or more of the following measures:*

*i. placing buildings containing less sensitive uses between the emission source and sensitive land uses and areas;*

*ii. within individual buildings, place rooms more sensitive to air quality and noise impacts (e.g. bedrooms) further away from the emission source;*

iii. *erecting noise attenuation barriers provided the requirements for safety, urban design and access can be met;*

(b) *use building design elements such as varying building heights, widths, articulation, setbacks and shapes to increase wind turbulence and the dispersion of air pollutants provided wind impacts on pedestrian amenity are acceptable;*

(c) *locate ground level private open space, communal open space and outdoor play areas within educational establishments (including childcare centres) away from the emission source.*

Given the proximity of the subject site adjacent Unley Road (within the Noise and Air Emissions Designated Area), it is accepted that noise levels and air emissions enjoyed in Residential Zones may not be achieved on the subject site.

Resonate Acoustics were engaged to prepare Acoustic Design Advice for the proposed development, in order to mitigate the noise impacts from Unley Road and any mechanical services required for the development. A copy of this advice is included in Appendix 9.

The advice provided by Resonate Acoustics allocated each building façade to a sound exposure category based on its proximity to Unley Road and other noise sources. Based on these categories, recommendations on how to achieve the required internal sound levels were then made for each façade. These recommendations are listed in the Proposal Description section of this report, and the applicant agrees to their inclusion in the development to ensure that the EPP noise guidelines are achieved.

Respecting the above, we have formed the opinion that apartments within the proposed development will be able to achieve the necessary internal noise levels, and will not result in any detrimental noise impacts.

## 5.9 Affordable Housing

The Affordable Housing Overlay applies to the proposal. The Overlay is not mandatory, and given the intent to deliver high quality owner occupier apartments at a price point well beyond the affordable housing price threshold, affordable housing will not be provided in this particular instance.

## 6. CONCLUSION

In our opinion, while the height of the proposed development exceeds the maximum height envisaged for the policy area, the proposed development is located on a site and within a locality which can support an increased height and scale. Further, the proposal substantially accords with all other the relevant Development Plan provisions. Specifically, the proposal will:

- represent an appropriate density of development given the proximity of the subject site to public transport, amenities, local services and facilities;
- contribute positively to ground level activation and revitalisation, whilst continuing to maintain the narrow-fronted commercial tenancies which characterise Unley Road;
- create a high quality pedestrian experience through the inclusion of a podium element, a predominately glazed ground floor, and canopies above the pedestrian footpath;
- provide an overall building appearance and design that represents a high architectural standard responding to both the existing and future character of Unley Road;
- although not adjacent to land within the Residential Zone, the development is contained within the envisaged 30 degree building envelope plane;
- be of an overall height and scale that will not unreasonably impact surrounding residential properties by way of overshadowing, overlooking, or visual impacts;
- be sited and designed in a manner that will not present any unreasonable impacts upon surrounding properties or the character of adjacent roads;
- include a communal courtyard area of high amenity, which is extensively landscaped to present as a grand entrance for residents and visitors;
- present a range of apartment types in close proximity to public transport links and public facilities;
- create a high quality apartment offering with excellent views;
- provide apartment layouts which achieve all relevant passive design principles with natural daylight to all habitable rooms, natural ventilation and shading;
- provide high quality apartments which adequately provide private open space and storage;
- provide sufficient car and bicycle parking;
- allow safe, convenient and effective movement for all vehicle types and pedestrians;
- provide for safe and effective waste management and stormwater plans;
- adequately control noise emissions, whilst ensuring internal noise levels meet the EPP requirements;
- mitigate the potential for wind tunnelling through building articulation and use of setbacks;
- incorporate a large number of energy efficiency initiatives which aim to achieve a 7 Star average NatHER rating and result in annual energy usage of approximately 50 percent and an annual water usage of approximately 30 percent of a standard NCC compliant home; and
- create a safe, secure and crime resistant environment.

In addition, whilst the proposed development exceeds the prescribed maximum building height for High Street Policy Area, we do not consider the proposal to be “seriously at variance”.

The Supreme Court has considered the "seriously at variance" test on several occasions and has set out the following further guidance on the scope and meaning of the test under section 35 of the Development Act, 1993.

1. Mere variance from the Development Plan is not the test; it is a question of whether there is *"…an important or grave departure in either quality or degree from the Development Plan…"*[1];
2. "*The question … requires an examination on what is the essential thrust and objective of the Development Plan…"* and it is necessary to look at the Development Plan as a whole to determine the extent of the variance[2];
3. The extent of variance is judged in the context in which the project will be implemented[3];
4. The assessment is likely to involve a judgement as to planning merit based on matters of fact and degree[4];
5. If the development will entirely defeat the purpose of the zone, then it will be seriously at variance[5]; and
6. "The calculation… is not to be resolved simply by mathematical calculation… those calculations should not receive undue weight. It is important also to have regard to the spirit and intent of the Development plan…"[6].

For example, whether or not the proposed development satisfies the envisaged building height, the location, overall design and impacts of the proposal are clearly envisaged by the desired character statement for High Street Policy Area 20.

When considering the issue of "seriously at variance" against the Development Plan as a whole, regard must be had to the intent and purpose of the Plan and the effect of the proposal on the attainment of that planning purpose.

Put simply, while the proposed development exceeds the envisaged maximum building height, the proposal will not defeat the fundamental purpose of the Zone or Policy Area or create any patent fatal planning issues in the immediate locality.

It is also important to note that the Government Architect previously issued a Pre-Lodgement Agreement and the DAC granted Development Plan Consent for a much larger development adjacent to the Residential Streetscape (Built Form) Zone. The subject proposal has effectively used this previously approved development as a guide to prepare a much more deliverable and marketable product of lower scale; which has no Residential Streetscape (Built Form) Zone interface; and which is contained wholly within the 30 degree building envelope plane.

[1] Courtney Hill Pty Ltd v SAPC (1990) 59 SASR 259 at p261; Mar Mina (SA) Pty Ltd v City of Marion & Others (2008) 163 LGERA 24 at [33].
[2] Mar Mina (SA) Pty Ltd v City of Marion & Others (2008) 163 LGERA 24 at [40]; Courtney Hill Pty Ltd v SAPC (1990) 59 SASR 259 at p262.
[3] Courtney Hill Pty Ltd v SAPC (1990) 59 SASR 259 at p263.
[4] City of Kensington & Norwood v DAC & Boscaini Investments Pty Ltd (1988) 70 SASR 471 at p480.
[5] Paradise Development (Investments) Pty Ltd v DC Yorke Peninsula & Anor [2008] SASR 139 at [63].
[6] Hayes v DAC (no. 4) Unreported SASC Judgement S6155 15 May 1997 at p24.

Exceeding the maximum building height does not make this proposal “seriously at variance”. When considering as a whole and taking all of the Development plan into account, the proposal is clearly not seriously at variance with the Development Plan.

Accordingly, we believe the Development Assessment Commission should grant Development Plan Consent.

PHIL WEAVER & ASSOCIATES

Consultant Traffic Engineers
ABN 67 093 665 680

204 Young Street
Unley SA 5061

P: 08 8271 5999
F: 08 8271 5666
E: mail@philweaver.com.au

File: 060-17

20 July 2017

Mr Anthony Catinari
Commercial and General
Level 7, 2 King William Street
ADELAIDE SA 5000

Dear Mr Catinari,

**PROPOSED MIXED USE DEVELOPMENT - 244 – 246 UNLEY ROAD, UNLEY - TRAFFIC AND PARKING ASSESSMENT**

I refer to the proposed construction of a multi-level building to accommodate residential and commercial land uses together with basement and undercroft car parking on the above site.

As requested I have undertaken the following review of the traffic and parking related aspects of the subject development.

**Existing Situation**

The subject site is located on the south-western corner of the intersection of Unley Road with Hart Avenue, Unley.

The site of the proposed development currently accommodates:-

- Commercial tenancies with a total floor area of approximately 1640m$^2$. These include: -
  - Connekt Plumbing,
  - A fitness studio (F45 Training),
  - Plaster Funhouse, and
  - A vacant tenancy.
- One residential dwelling fronting onto Hart Avenue, namely 1 Hart Avenue, and
- An informal car parking area at the rear of the tenancies fronting Unley Road, with access provided off Hart Avenue. This car parking area provides a capacity to accommodate approximately 10 cars.

The proposed development site has frontages of approximately 42m to Unley Road and approximately 59.2m to Hart Avenue.

There are currently two access points associated with the subject site. These include an individual driveway to the residential dwelling fronting Hart Avenue and one access point off Hart Avenue into the car parking area at the rear of the building located at 244 Unley Road.

Unley Road, adjacent to the subject site, provides two traffic lanes and a bicycle lane in each direction. The bicycle lane operates between 7.30am and 9.00am Monday to Friday on the western side of this road and between 4.30pm and 6.00pm Monday to Friday on the eastern side of this road i.e. during the morning and afternoon Clearway periods, respectively.

Parking is restricted to one-hour periods between 9.00am and 5.00pm Monday to Friday and between 9.00am and 12 noon on Saturday on the western side of Unley Road, for a distance of approximately 55m north of Opey Avenue. A bus zone is located to the north of the one-hour parking area i.e. in the area in front of the subject site.

A bus zone / No Stopping Anytime restriction is located along the eastern side of Unley Road in front of the Cremorne Hotel which is almost directly opposite the subject site.

A parking embayment is provided on the western side of Unley Road immediately to the north of Opey Avenue, for a distance of approximately 30m.

Hart Avenue, adjacent to the subject site, has a kerb to kerb width of approximately 8m with verge widths of approximately 2m on each side of this road. Parking is restricted to one-hour periods between 9.00am and 5.00pm Monday to Friday and between 9.00am and 12 noon on Saturday on the southern side of this road from Unley Road up to the existing access point to the east of 1 Hart Avenue. Further to the west, parking is unrestricted along the southern side of Hart Avenue.

A loading zone is provided on the northern side of Hart Avenue to the west of Unley Road for a distance of approximately 10m. This loading zone is operational from 7.00am to 2.00pm Monday to Friday with parking permitted in this area outside of these periods. Further to the west along this side of Hart Avenue, parking is also unrestricted.

Details of traffic volumes on Unley Road have been obtained from the Department of Planning, Transport and Infrastructure, (DPTI). From a traffic count undertaken at the intersection of Unley Road with Park Street / Wattle Street on Wednesday 6th August 2014 it is identified that the two-way Annual Average Daily Traffic (AADT) volume to the south of the subject site is approximately 36,200 vpd on Unley Road.

**Traffic Surveys**

Traffic surveys have previously been conducted at the intersection of Unley Road with Hart Avenue and Fairford Street. These surveys were conducted over the following periods:-

- From 3.00pm to 6.00pm on Thursday 10th April 2014, and
- From 7.30am to 9.30am on Friday 11th April 2014.

Analysis of the 2014 survey results identified that the peak hour periods occurred between 5.00pm and 6.00pm on the Thursday evening and between 8.30am and 9.30am on the Friday morning.

It was further identified that:-

- During the pm peak hour period on the Thursday there were 26 traffic movements (14 in and 12 out) at the intersection of Unley Road and Hart Avenue, with no movements occurring between Hart Avenue and Fairford Street, and

- There were 17 traffic movements (11 in / 6 out) at the intersection of Unley Road and Hart Avenue, in the am peak hour period, with again no movements occurring between Hart Avenue and Fairford Street.

Figure 1 summarises the peak hour traffic flows entering/ exiting Hart Avenue in both the am and pm survey periods.

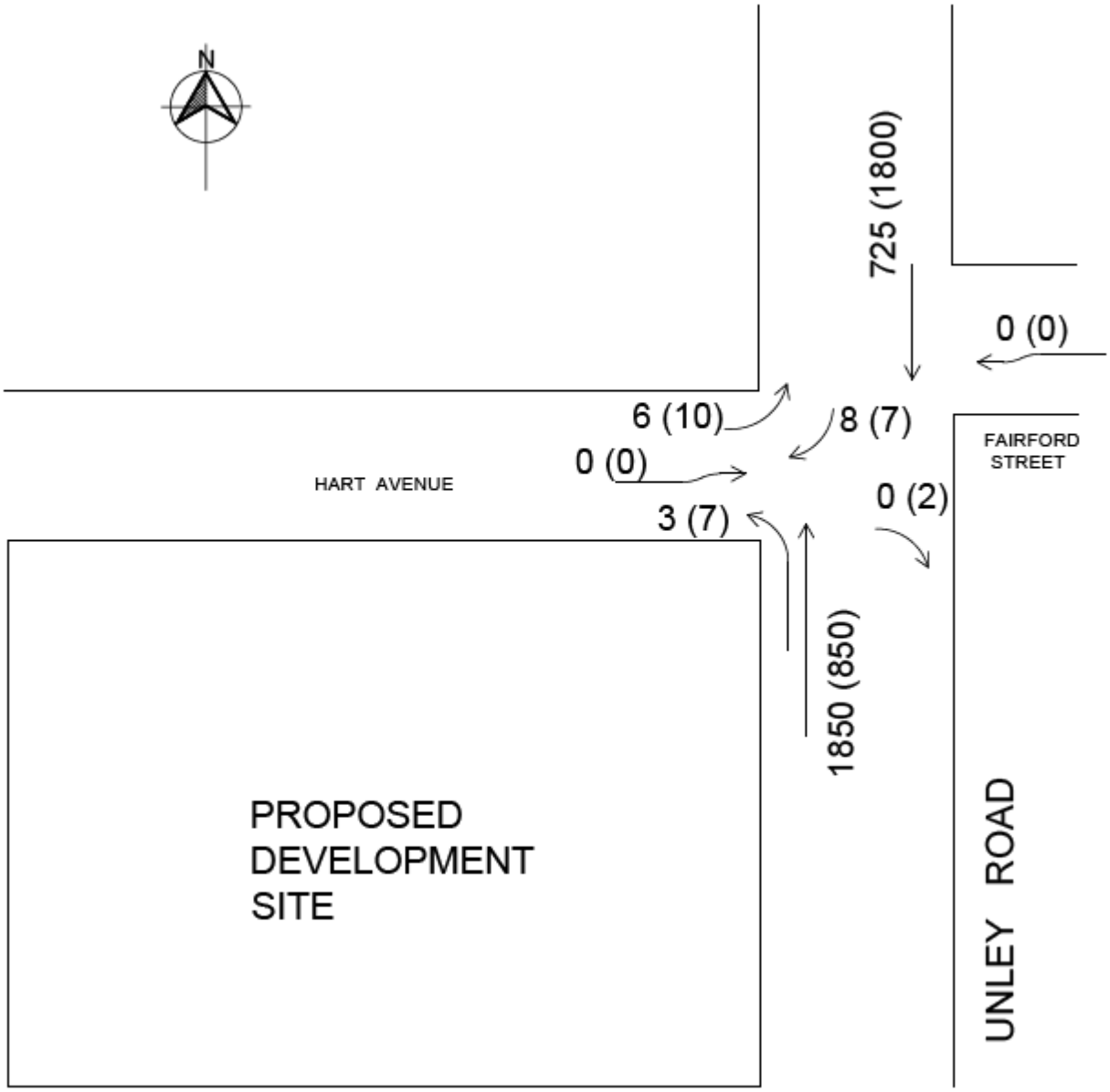



***Figure 1: Existing am (pm) peak hour volumes on adjoining road network***

The above surveys were undertaken at a time when all of the tenancies on the site were occupied. The results of the surveys are considered to be appropriate for use in determining the traffic impacts of the proposed development, given that:-

- The existing land uses were understood to be fully occupied at the time of the surveys, and
- There would not have been any significant change in traffic on the adjoining road network in the period since the surveys were conducted.

**Proposed Development**

The proposed development is identified on a series of plans prepared by Tectvs including:-

- A Ground Floor Plan (Drawing No. 27080 P01)
- A Basement Plan (Drawing No. 27080 P02), and
- A Lower Basement Plan (Drawing No. 27080 P03),

I note that the proposed development includes:-

- Demolition of the commercial tenancies fronting Unley Road and the residential dwelling located at 1 Hart Avenue,
- Construction of a multi-level building which will provide a total of 86 car parking spaces comprising:-
  - An undercroft parking area accommodating a total of 26 spaces,
  - A basement car parking area providing 42 spaces,
  - A lower basement car parking area providing 18 spaces,
- Construction of a total of 59 apartments over 6 levels, including:-
  - 10 one bedroom apartments,
  - 45 two bedroom apartments,
  - 4 three bedroom apartments,
- Construction of four commercial tenancies to be located on the ground floor level fronting onto Unley Road with a total commercial area of approximately 580m², and
- Two vehicular access points on the southern side of Hart Avenue. There will be no vehicular access provided into or out of the subject site directly off Unley Road.

The undercroft car park will be primarily accessed via a two-way crossover to be located approximately 23m west of the Unley Road boundary i.e. in a similar location to the existing access point into the informal car park at the rear of the existing tenancies fronting Unley Road. However, 9 of these spaces will be accessed via the western access point on Hart Avenue.

The basement and lower basement car parking areas will be accessed off Hart Avenue via the western access point. This access point will be located approximately 43m to the west of the eastern boundary of the site.

The proposed basement car parking areas will include:-

- Vehicle ramps to provide access between the ground level and lower basement / basement car parking areas. The design of the ramp into the basement car park will include a maximum grade of approximately 1 in 4.5 based upon an overall change in level of approximately 3.2m. The minimum clearance within the basement areas will be 2.3m,

- 28 wall mounted bicycle parking spaces to be located in the basement car park, and 8 bicycle parking spaced to be provided to the east of the undercroft parking area on the ground level of the subject development,

- Refuse areas to be located within the ground floor area adjacent to Hart Avenue,

- Lift and stair access from both car parking levels to the apartments on the upper levels.

The design of the on-site basement and lower basement car parking areas provide:-

- Car parking spaces of 2.4m in width,

- Car parking spaces of 5.4m in length, and

- Aisle widths of 6.2m with provision made for an additional 300mm clearance adjacent to stairs and other building elements adjacent to the aisles.

The undercroft car parking areas will provide a mixture of primarily 2.4m and 2.55m wide spaces with the narrower spaces suitable for staff / tenant parking. However, I recommend that the two spaces adjacent to the ramp linking the ground and basement car parking levels should be denoted for small car use by means of pavement markings and / or signage.

I also note that the design identifies a column on the western side of the easternmost access point which intrudes into the 2m wide by 2.5m deep sight distance splay requirement of the relevant off-street car parking standard (AS/NZS 2890.1:2004). I recommend that the location / shape of this column be adjusted during detailed design. I understand that this can be accommodated.

The disability parking space will provide a width of 2.4m with an adjacent shared area of the same width.

As such, I consider that the design of the on-site car parking areas would generally conform to the requirements of the relevant off-street car parking standards (AS/NZS 2890.1:2004 and AS/NZS 2890.6:2009) for long term (resident / tenant) car parking.

**Parking Assessment**

The subject site is located within an Urban Corridor Zone as identified within the Unley (City) Development Plan as consolidated on 4th July 2017.

**Table Un/5A - Off Street Vehicle Parking Requirements for Designated Areas** within the Unley (City) Development Plan identifies car parking requirements for the non-residential land uses relevant to the subject development, as follows:-

**Table 1: Non-residential development excluding tourist accommodation**

| Location of development | Desired minimum number of vehicle parking spaces | Maximum number of vehicle parking spaces |
|---|---|---|
| Urban Corridor Zone | 3 spaces per 100m² of gross leasable floor area | 5 spaces per 100m² of gross leasable floor area |

On the above basis, the non-residential components of the proposed development would require the provision of 18 spaces based on a floor area of 580m².

Therefore, the provision of 26 spaces to be provided within the undercroft area would exceed the required level of parking for the commercial components.

Table Un/5A does not include car parking rates for residential land use. I therefore considered the car parking rate outlined for mixed use developments located in non-residential zones within Table Un/5 – Off Street Vehicle Parking Requirements in relation to the residential component of the current development.

On this basis, I calculate that the proposed development demands the following car parking rates for the residential land use according to *Table Un/5 – Off Street Vehicle Parking Requirements* would be as follows: -

- 20 apartments (under 75 square metres in floor area) = 15 car parking spaces (0.75 x 20 apartments),
- 35 apartments (over 75 square metres, but under 150 square metres in floor area) = 44 car parking spaces (1.25 x 35 apartments),
- 4 apartments over 150 square metres in floor area = 7 car parking spaces (1.75 x 4 apartments), and
- 15 visitor car parking spaces in total (0.25 x 59 apartments).

Hence, there would be a requirement for a total of 66 car parking spaces to be provided for the occupants of the residential apartments in addition to 15 car parking spaces for residential visitors. The car parking requirement generated by residents could be accommodated in the basement levels (60 spaces), with the remaining 6 spaces accommodated in the ground floor car parking area.

In relation to the visitor car parking spaces, I consider that the spaces can be accommodated within the 20 remaining car parking spaces at ground level, and shared with the commercial/retail uses as envisaged by Transportation PDC 29. Such shared use is appropriate given that visitor car parking typically occurs outside of business hours when the commercial/retail tenancies are closed, and would be exceeded by the provision of 20 spaces at ground level. The apartments are less likely to receive visitors during commercial business hours. It is therefore it is likely that these spaces will be available for commercial/retail use during this time..

Given that the proposed development is located within an Urban Corridor Zone, I consider that the actual car parking demand should be less than the above requirements, noting in particular: -

- The close proximity of the proposed development to frequent and convenient bus services.
- The provision of on-site bicycle parking in excess of the minimum requirements of Council's Development Plan, and
- The complementary nature of the residential and non-residential land uses to be accommodated on site.

Furthermore, I note that the **"Guide to Traffic Generating Developments"** report produced by the former Roads and Traffic Authority (RTA) of NSW identifies lesser rates for high density residential flat buildings such as that proposed on site.

The definition of a high density residential flat building being "a building containing 20 or more dwellings". This does not include aged or disabled persons housing. *High density residential flat buildings* are usually more than five levels, have basement level car parking and are located in close proximity to public transport services. The building may contain a component of commercial use."

The above standard recommends a minimum number of off-street resident parking spaces as follows:-

**Metropolitan Sub-Regional Centres:**

- 0.6 spaces per 1 bedroom unit,
- 0.9 spaces per 2 bedroom unit,
- 1.4 spaces per 3 bedroom unit, and
- 1.0 space per 5 units (visitor parking).

On the above basis, I calculate that the apartment component of the proposed development would generate a requirement for approximately 64 spaces comprising 52 spaces for residents and 12 visitor parking spaces. Such a level of car parking is less than the 66 spaces required for residents but comparable in terms of visitor parking demand based on the relevant provisions within Council's Development Plan relating to the residential component of the subject development.

Taking into account that the parking requirement of the non-residential component is equivalent to 18 spaces, application of the above RTA rates would generate an estimated peak demand for approximately 82 car parking spaces associated with the subject development. This level of car parking would be readily accommodated within the basement levels and undercroft car parking area which will provide a total of 86 spaces.

**Bicycle Parking**

**Table Un/6 - Off Street Bicycle Parking Requirements for Mixed Use, Corridor and District Centre Zones** within the Unley (City) Development Plan identifies bicycle parking requirements as follows:

| Form of development | Employee / resident (bicycle parking spaces) | Visitor / shopper (bicycle parking spaces) |
|---|---|---|
| Residential component of multi-storey building / residential flat building | 1 space for every 2 dwellings | 1 space for every 6 dwellings |
| Shop | 1 space for every 300 square metres of gross leasable floor area | 1 spaces for every 600 square metres of gross leasable floor area |
| Office | 1 space for every 150 square metres of gross leasable floor area | 2 spaces plus 1 space per 500 square metres of gross leasable floor area |

Assuming an approximately 50:50 split of office and retail use within the non-residential component of the proposed development, there would be a theoretical requirement for 45 bicycle parking spaces as follows:-

- 30 resident spaces,
- 10 visitor spaces,
- Office: 3 spaces (i.e. 2 spaces for employees and 1 space for clients),
- Retail: 2 spaces (i.e. 1 space for staff and 1 space for customers)

Provision has been made to accommodate bicycles used by residents within their respective apartments. Hence, there would be a requirement to provide a total of 15 spaces associated with visitors to the residential apartments and staff/clients or customers of the non-residential land uses. This level of bicycle parking would be accommodated by the provision of 28 wall mounted bicycle parking spaces within the basement area and 8 bicycle parking spaces within the undercroft parking area.

**Traffic Assessment**

The existing development on the subject site has a capacity to generate a pm peak hour traffic volume of the order of: -

- One trip per existing residential dwelling, and
- At least 2.5 trips per 100m² of floor space assuming a trip generation rate similar to that of a retail showroom or similar land use.

On the above basis, I calculate that the existing development on the site has the capacity to generate in the order of 40 trips in the pm peak hour including:-

- 1 peak hour trips associated with the one residential dwelling, and
- Approximately 41 trips associated with the commercial tenancies (1640m²) currently on site, albeit some of these trips would access the rear of the site via a driveway off Opey Avenue.

By way of comparison, I estimate that the proposed redevelopment of the subject site should generate of the order of 42 trips in the am peak hour based upon:-

- 290m² of non-office commercial space @ 6 peak hour trips / 100m² in the pm peak hour period = 17 trips,

- 290m² of office area @ 2 peak hour trips / 100m² = 6 trips, and

- 59 residential units generating an average of approximately 0.32 trips/dwelling in the pm peak hour period = 19 trips. This rate is based on an average trip generation rate of 0.32 trips / dwelling for high density developments and reports and average rate for regional NSW based upon data provided by Roads and Maritime Services (the former RTA). Such a rate is considered more applicable to Adelaide than the average trip generation rate of 0.15 trips per dwelling for the Sydney CBD.

The proposed non-office component of the subject development should generate minimal traffic in the am peak hour period and the office component should generate of the order of 2 trips / 100m² i.e. approximately 6 traffic movements in this period.

The residential component should generate of the order of 0.53 trips / dwelling in the am peak hour period (based on the Roads and Maritime Services data). This would be equivalent to a volume of approximately 31 vph generated by this component.

On the above basis, I consider that the subject development would generate a total of 37 trips in the am peak hour period.

I therefore consider that:-

- there would be no significant change to the approximately 40 trips generated as a result of the subject development in the am peak (37 forecast trips compared to 40 potential trips), and

- potentially there would be minimal increase in the pm peak hour based on the forecast volume of 42 trips less the approximately 40vph currently being generated by the subject development.

A review of the current and potential operation of the intersection of Unley Road with Hart Avenue has been undertaken using SIDRA Intersection Analysis Software. The forecast am and pm peak hour traffic volumes used in this analysis have been based on Figure 2 (below). However, for the purpose of this review I have allowed for a “worst case” scenario, i.e. that the forecast am and pm traffic volume will all be additional to the existing volume of traffic entering/exiting the Unley Road / Hart Avenue intersection.

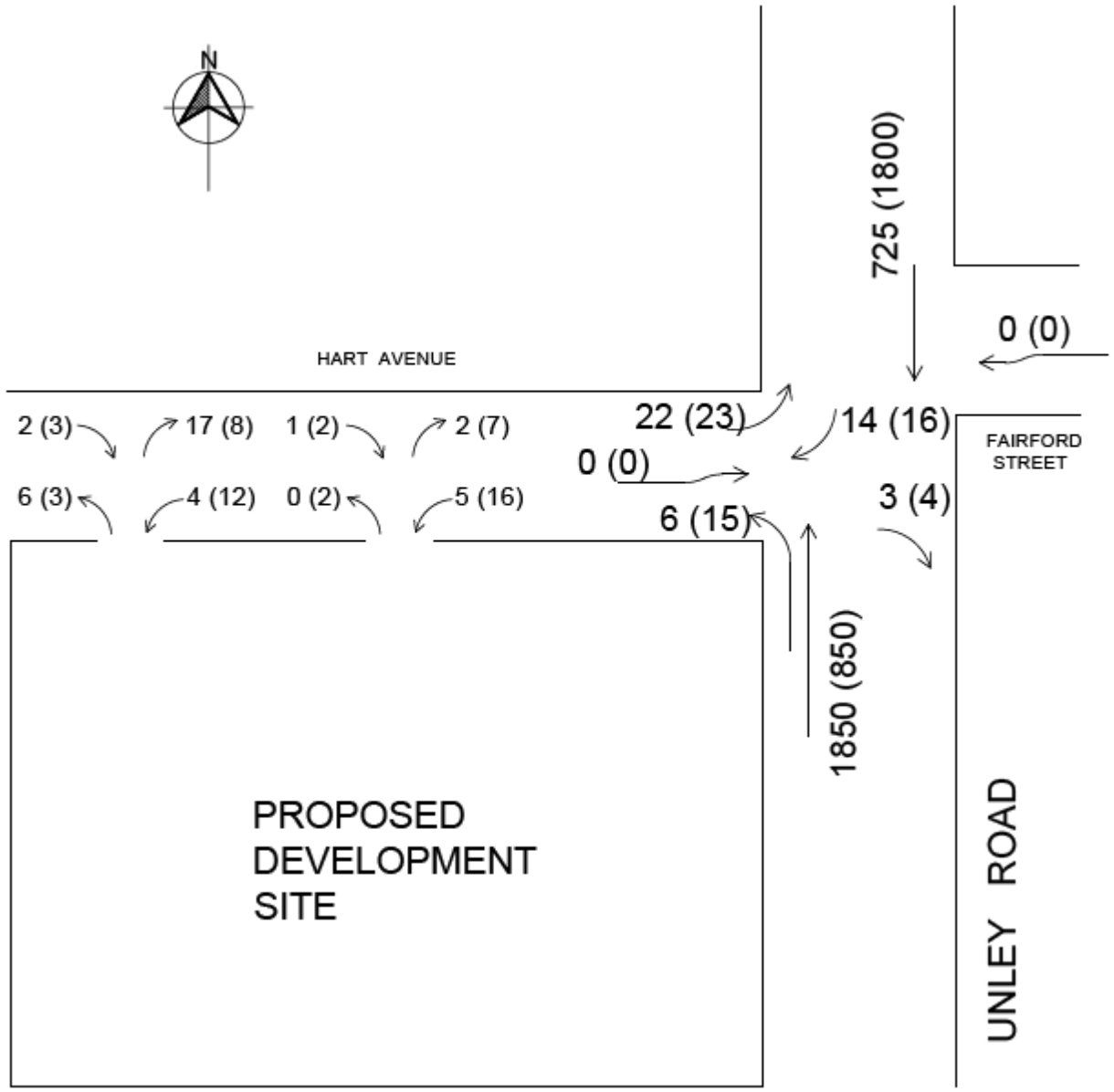



***Figure 2: Forecast am (pm) peak hour volumes entering / exiting the subject site and on adjoining road network***

For the purpose of the following intersection analysis it has been considered that the intersection of Unley Road / Hart Avenue has been treated as a T-junction.

Based on the review of the above intersection using SIDRA Intersection analysis software, it is identified that there would be comparatively minimal impact relating to the forecast additional movements using this intersection to access the site.

For example, comparison of the existing volumes and forecast volumes identifies that:-

- the average delay to drivers turning right from the northern approach of Unley Road into Hart Avenue would not increase in the am peak hour period and would increase from 15.7 seconds to 15.9 seconds in the pm peak hour period (subject to review),

- the length of queues associated with the right and through movements on Unley Road would remain acceptable,

- there would be some increase in the delays to drivers turning right from Hart Avenue onto Unley Road in both the am and pm peak hour periods, but such increases would have minimal impact on the level of service on Unley Road.

Copies of the movement summaries at the above intersection are included with this report.

It is proposed that waste and recycling will be collected on site by a private waste contractor with the relevant design vehicle reversing in of Hart Avenue and driving forward out onto this roadway once the collection is complete

Figure 3 shows the turning movement of the design vehicle restricted to the southern half of Hart Avenue only, allowing for cars to be parked on the northern side of this roadway.

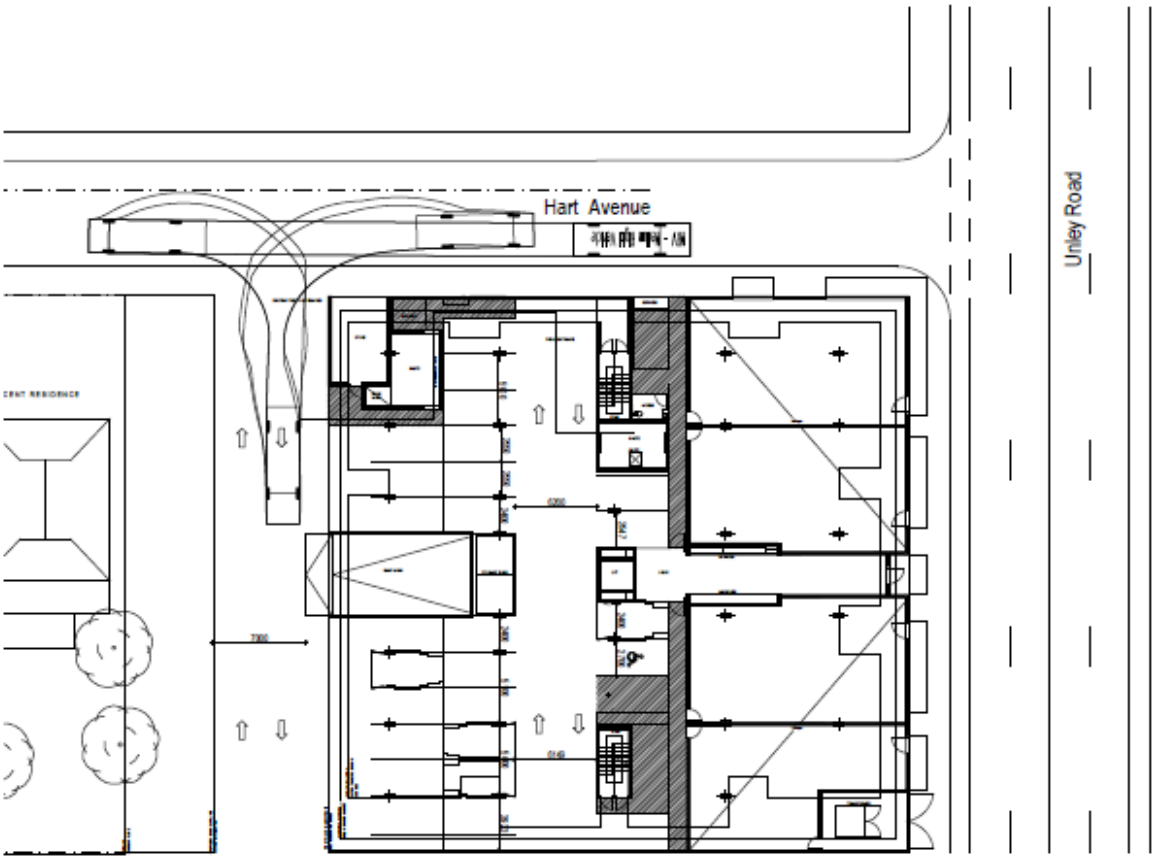



***Figure 3: Turning path of MRV Service vehicle***

A Waste Management Plan has been prepared by Rawtech in relation to the subject development. This report identifies that the number of truck movements for regular waste and recycling collections is anticipated to be of the order of up to 9 collections a week, namely:-

- 3 collections / week of General waste, and
- 3 collections / week Dry Recycling, and
- 3 collections / week of Organics. Although this proposal does not include a separate organic waste steam, provision for these collections has been included in the calculations to accommodate for the potential inclusion of organics as a separate waste stream in the future.

Some additional truck movements will be required on an infrequent basis for:-

- The servicing of the grease arrestor, and
- Irregular collections of hard waste and e-waste. This is anticipated every four to six weeks.

I therefore anticipate that there would be a requirement to service waste and recyclables on average twice a day.

**Summary and Conclusions**

In summary, the proposed development will result in the construction of a mixed use development on the site including:-

- 59 residential apartments,
- Commercial areas of approximately 580m², and
- A total on-site car parking provision equivalent to 86 spaces.

All traffic accessing the subject development will enter / exit the site via Hart Avenue and there will be no access into or out of the site directly from Unley Road. The undercroft car parking areas will be accessed via either of the two proposed access points. The basement car parking areas will be accessed only by the westernmost of the two access points on Hart Avenue.

Based on the above assessment it is considered that the on-site car parking areas would meet the peak parking demands of the subject development.

The proposed car parking areas have been designed in accordance with relevant off-street parking standards and will include appropriate levels of car parking for use by the disabled.

The proposed development will result in only minor increases in traffic flows on the road network and would result in minimal change to the operation of the Unley Road / Hart Avenue intersection.

A comparative analysis of the existing and forecast peak hour traffic volumes at the intersection of Unley Road with Hart Avenue indicates that there will be minimal increase in delays and queuing associated with traffic turning into this side road.

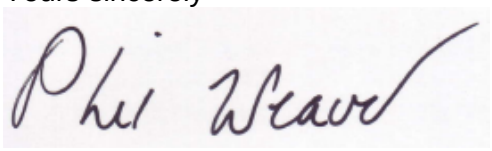
There will be some increase in peak hour volumes generated by the subject site compared to the existing recorded volumes of traffic in both the am and pm peak hours. However, the extent of this increase is not considered as being overly significant. In any event, the current levels of traffic do not reflect the potential traffic volumes associated with the current land uses on the site.

There should be minimal increase in the volumes of traffic travelling on Hart Avenue to and from the west of the site, given the relatively indirect nature of Hart Avenue to the west of the site.

Given the mostly residential nature of the subject development together with a small commercial component, the subject development should generate a lower level of delivery movements than the existing development on the site. The subject development will include on-site storage facilities for waste and recycling. These facilities will be located within the ground floor level and will be serviced by private waste contractor. It is understood that these vehicles would be able to reverse into the site via the western access point off Hart Avenue. These vehicles will then be driven forward out of the site. On this basis, it is anticipated that these vehicles would access the site via Hart Avenue, both to and from Unley Road.

Based on the above assessment the proposed development is supported on traffic engineering grounds.

Yours sincerely



Phil Weaver
Phil Weaver and Associates Pty Ltd

Enc

# MOVEMENT SUMMARY

## Site: 244 Unley Road development – Unley Road / Hart Avenue - existing am period

Unley Road / Hart Avenue - existing am peak hour period
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | ODMov | Demand Flows Total | HV | Deg. Satn | Average Delay | Level of Service | 95% Back of Queue Vehicles | Distance | Prop. Queued | Effective Stop Rate | Average Speed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | veh/h | % | v/c | sec | | veh | m | | per veh | km/h |
| South: Unley Road - southern approach | | | | | | | | | | | |
| 1 | L2 | 3 | 0.0 | 0.510 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 58.2 |
| 2 | T1 | 1947 | 2.9 | 0.510 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| Approach | | 1951 | 2.9 | 0.510 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| North: Unley Road - northern approach | | | | | | | | | | | |
| 8 | T1 | 763 | 3.4 | 0.237 | 3.7 | LOS A | 2.1 | 15.4 | 0.10 | 0.01 | 56.2 |
| 9 | R2 | 8 | 0.0 | 0.237 | 47.4 | LOS E | 2.1 | 15.4 | 0.26 | 0.02 | 50.2 |
| Approach | | 772 | 3.4 | 0.237 | 4.2 | NA | 2.1 | 15.4 | 0.11 | 0.01 | 56.1 |
| West: Hart Avenue | | | | | | | | | | | |
| 10 | L2 | 6 | 0.0 | 0.394 | 113.4 | LOS F | 1.0 | 6.9 | 0.99 | 1.01 | 12.0 |
| 12 | R2 | 1 | 0.0 | 0.394 | 1016.8 | LOS F | 1.0 | 6.9 | 0.99 | 1.01 | 12.0 |
| Approach | | 7 | 0.0 | 0.394 | 242.5 | LOS F | 1.0 | 6.9 | 0.99 | 1.01 | 12.0 |
| All Vehicles | | 2729 | 3.0 | 0.510 | 1.9 | NA | 2.1 | 15.4 | 0.03 | 0.01 | 58.1 |

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

## Site: 244 Unley Road development – Unley Road / Hart Avenue - existing pm period

Unley Road / Hart Avenue - existing pm peak hour period
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | ODMov | Demand Flows Total | HV | Deg. Satn | Average Delay | Level of Service | 95% Back of Queue Vehicles | Distance | Prop. Queued | Effective Stop Rate | Average Speed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | veh/h | % | v/c | sec | | veh | m | | per veh | km/h |
| South: Unley Road - southern approach | | | | | | | | | | | |
| 1 | L2 | 7 | 0.0 | 0.236 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 58.2 |
| 2 | T1 | 895 | 3.0 | 0.236 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| Approach | | 902 | 3.0 | 0.236 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 59.9 |
| North: Unley Road - northern approach | | | | | | | | | | | |
| 8 | T1 | 1895 | 3.0 | 0.502 | 0.2 | LOS A | 0.3 | 2.4 | 0.02 | 0.00 | 59.8 |
| 9 | R2 | 7 | 0.0 | 0.502 | 15.7 | LOS C | 0.3 | 2.4 | 0.03 | 0.00 | 57.9 |
| Approach | | 1902 | 3.0 | 0.502 | 0.2 | NA | 0.3 | 2.4 | 0.02 | 0.00 | 59.8 |
| West: Hart Avenue | | | | | | | | | | | |
| 10 | L2 | 11 | 0.0 | 1.000 | 554.5 | LOS F | 3.7 | 25.8 | 0.99 | 1.21 | 4.3 |
| 12 | R2 | 2 | 0.0 | 1.000 | 1989.4 | LOS F | 3.7 | 25.8 | 0.99 | 1.21 | 4.3 |
| Approach | | 13 | 0.0 | 1.000 | 793.6 | LOS F | 3.7 | 25.8 | 0.99 | 1.21 | 4.3 |
| All Vehicles | | 2817 | 3.0 | 1.000 | 3.7 | NA | 3.7 | 25.8 | 0.01 | 0.01 | 56.5 |

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

## Site: 244 Unley Road development – Unley Road / Hart Avenue - forecast am period

Unley Road / Hart Avenue - forecast am peak hour period
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | ODMov | Demand Flows Total | HV | Deg. Satn | Average Delay | Level of Service | 95% Back of Queue Vehicles | Distance | Prop. Queued | Effective Stop Rate | Average Speed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | veh/h | % | v/c | sec | | veh | m | | per veh | km/h |
| South: Unley Road - southern approach | | | | | | | | | | | |
| 1 | L2 | 6 | 0.0 | 0.511 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 58.2 |
| 2 | T1 | 1947 | 3.0 | 0.511 | 0.1 | LOS A | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| Approach | | 1954 | 3.0 | 0.511 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.00 | 59.8 |
| North: Unley Road - northern approach | | | | | | | | | | | |
| 8 | T1 | 763 | 3.4 | 0.266 | 5.5 | LOS A | 6.9 | 49.8 | 0.34 | 0.02 | 54.5 |
| 9 | R2 | 15 | 0.0 | 0.266 | 46.7 | LOS E | 6.9 | 49.8 | 1.00 | 0.06 | 45.2 |
| Approach | | 778 | 3.4 | 0.266 | 6.3 | NA | 6.9 | 49.8 | 0.35 | 0.02 | 54.3 |
| West: Hart Avenue | | | | | | | | | | | |
| 10 | L2 | 23 | 0.0 | 1.000 | 321.0 | LOS F | 4.7 | 33.2 | 1.00 | 1.21 | 7.4 |
| 12 | R2 | 3 | 0.0 | 1.000 | 1240.9 | LOS F | 4.7 | 33.2 | 1.00 | 1.21 | 7.4 |
| Approach | | 26 | 0.0 | 1.000 | 431.4 | LOS F | 4.7 | 33.2 | 1.00 | 1.21 | 7.4 |
| All Vehicles | | 2758 | 3.1 | 1.000 | 6.0 | NA | 6.9 | 49.8 | 0.11 | 0.02 | 54.6 |

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

## Site: 244 Unley Road development – Unley Road / Hart Avenue - forecast pm period

Unley Road / Hart Avenue - forecast pm peak hour period
Giveway / Yield (Two-Way)

**Movement Performance - Vehicles**

| Mov ID | OD Mov | Demand Flows Total | HV | Deg. Satn | Average Delay | Level of Service | 95% Back of Queue Vehicles | Distance | Prop. Queued | Effective Stop Rate | Average Speed |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | veh/h | % | v/c | sec | | veh | m | | per veh | km/h |
| South: Unley Road - southern approach | | | | | | | | | | | |
| 1 | L2 | 16 | 0.0 | 0.238 | 5.6 | LOS A | 0.0 | 0.0 | 0.00 | 0.02 | 58.1 |
| 2 | T1 | 895 | 3.0 | 0.238 | 0.0 | LOS A | 0.0 | 0.0 | 0.00 | 0.01 | 59.9 |
| Approach | | 911 | 2.9 | 0.238 | 0.1 | NA | 0.0 | 0.0 | 0.00 | 0.01 | 59.8 |
| North: Unley Road - northern approach | | | | | | | | | | | |
| 8 | T1 | 1895 | 3.0 | 0.510 | 0.3 | LOS A | 0.8 | 5.5 | 0.03 | 0.01 | 59.6 |
| 9 | R2 | 17 | 0.0 | 0.510 | 15.9 | LOS C | 0.8 | 5.5 | 0.07 | 0.01 | 57.4 |
| Approach | | 1912 | 3.0 | 0.510 | 0.4 | NA | 0.8 | 5.5 | 0.04 | 0.01 | 59.6 |
| West: Hart Avenue | | | | | | | | | | | |
| 10 | L2 | 24 | 0.0 | 1.000 | 325.9 | LOS F | 4.9 | 34.2 | 0.97 | 1.37 | 7.4 |
| 12 | R2 | 4 | 0.0 | 1.000 | 1057.2 | LOS F | 4.9 | 34.2 | 0.97 | 1.37 | 7.4 |
| Approach | | 28 | 0.0 | 1.000 | 434.3 | LOS F | 4.9 | 34.2 | 0.97 | 1.37 | 7.4 |
| All Vehicles | | 2851 | 2.9 | 1.000 | 4.7 | NA | 4.9 | 34.2 | 0.03 | 0.02 | 55.7 |

Level of Service (LOS) Method: Delay (HCM 2000).
Vehicle movement LOS values are based on average delay per movement
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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CATCORP

# Unley Road Development
# Waste Management Plan

**July 2017**

Prepared by Rawtec Pty Ltd

ABN 59 127 176 569
PO Box 1159,
Glenelg South SA 5045
Ph: +61 8 8294 5571
www.rawtec.com.au

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## Document verification

| Date | Version | Title | Prepared by | Approved by |
|---|---|---|---|---|
| 20/6/17 | V1 | Unley Road Development, Waste Management Plan Draft | Matt Allan and Kat Heinrich | Kat Heinrich |
| 6/7/17 | V2 | Unley Road Development, Waste Management Plan | Matt Allan and Kat Heinrich | Kat Heinrich |
| 11/7/17 | V3 | Unley Road Development, Waste Management Plan | Matt Allan and Kat Heinrich | Kat Heinrich |

# Contents

1. Introduction ..... 4
2. Description of the Development ..... 6
3. Overarching Approach ..... 8
4. Estimated volumes and storage areas ..... 10
5. Waste Management System (WMS) ..... 15
6. Collection Requirements and Vehicle Movements ..... 17
7. Supporting Documentation and Design Details ..... 18

Appendix 1: Estimated Waste generation Volumes by Land Use and Waste Stream ..... 19

# 1. Introduction

## 1.1 Purpose

This document provides a waste management plan (WMP), for the proposed development identified in Table 1-1 below. This WMP will be included with building plans for the development lodged with the Development Assessment Commission (DAC) to obtain Development Approval. The WMP outlines the proposed waste management system (WMS) for the development at high-level, which demonstrate that successful management of waste can be achieved at the site.

**Table 1-1: Proposed development's details**

| | |
|---|---|
| **Site Location** | 246 Unley Road, Unley, SA 5061 |
| **Development Project** | Unley Road Development |
| **Client** | CATCORP |
| **Project Architect** | Tectvs |

## 1.2 What this Waste Management Plan Contains

**Table 2: WMP overview**

| | |
|---|---|
| **Section 2 – Description of Development** | Provides details of the development relevant to the WMP preparation and indicates the waste and recycling collection services proposed for the development. |
| **Section 3 – Design Approach & Assumptions** | Sets out the design approach and assumptions that have been used in preparing this WMP. |
| **Section 4 – Estimated Volumes, Storage Area and considerations for the development** | Provides estimates of the waste and recycling volumes likely to be generated at the site which will require storage, collection and disposal. Better practice waste management considerations for the development are also provided. |
| **Section 5 – Waste Management System (WMS)** | Provides an overview of the proposed WMS for the development, including the main elements and important design requirements, and how these systems should operate. The WMS outlines how waste would be stored, transferred and collected at the site. |
| **Section 6 – Collection Requirements** | Includes relevant information on collection requirements, including number of collections per week and provision for access and maneuverability for waste collection vehicles. |
| **Section 7 – Supporting Documentation & Design Details** | This section outlines the required supporting documentation & design details that need to be confirmed in addition to the WMS outlined in this WMP. |
| **Appendix 1 – Estimated Waste Generation Volumes by Land Use & Waste Stream** | This appendix shows the estimated waste and recycling volumes generated by individual land uses and waste streams across the development, used in the preparation of the WMP. |

## 1.3 WMP Status

### 1.1.1. Currently proposed WMS & WMP

This WMP has been developed for the planning stage of this development. It provides a preliminary design for the WMS for this site and is intended to demonstrate that successful management of waste can be achieved at the site. To support this WMP, the Client will need to provide the additional documentation or details on their plans as listed in Section 7.

### 1.1.2. Further development of WMS & Finalisation of WMP

The suggested arrangements in this WMP are preliminary and reflect one possible configuration for the waste management system at this site. These arrangements could evolve and be refined (during detailed building design) before the construction takes place. This may affect the WMP for the site, which should be updated accordingly.

## 1.4 Important Notes

This WMP has been developed in conjunction with the Client, Project Architects, and Traffic Consultant, who have indicated the intended site uses of the development, occupancy data, and requirements for how waste should be managed. If future proposed uses and waste management arrangements for the development are altered, the WMP may need to be reconsidered.

# 2. Description of the Development

## 2.1 Land Uses and Occupancy Data

CATCORP and Tectvs have provided Rawtec with a description of the development and plans showing the proposed layout of the site, buildings and land uses, which can be found in Table 2-1 below. Note that based on discussions with CATCORP, the land uses in the commercial areas on the ground floor are assumed to be a café, retailer and offices.

**Table 2-1: Land use and occupancy overview**

| Land Use | Location | Land Use Type According to Plans | Land Use Type for waste generation calculation (commercial are assumed) | Occupancy Data |
|---|---|---|---|---|
| Commercial | Ground Floor | Commercial tenancy | Café/ Restaurant | 150m$^2$ |
| | | Commercial tenancy | Retail (greater than 100 m$^2$) | 150m$^2$ |
| | | Commercial tenancy | Retail (greater than 100 m$^2$) | 150m$^2$ |
| | | Commercial tenancy | Offices or consulting rooms | 125m$^2$ |
| **Total commercial** | | | | **575m$^2$** |
| Residential | Levels 1 - 5 | 11 Apartments per floor, 55 apartments total | Residential (high density) | 100 bedrooms |
| | Level 6 | 4 Apartments | Residential (high density) | 12 bedrooms |
| **Total Residential** | | | | **112 bedrooms** |

## 2.2 Site Waste Management Requirements

The following waste management and operational arrangements were identified as preferred for the site by the Client and Project Architect (Table 2-2). These arrangements have been considered when developing the design of the proposed waste management system and the information contained in the waste management plan.

**Table 2-2: Site requirement summary**

| Waste Management Requirement | Description |
|---|---|
| **Waste Storage** | The plans allocate room for a single chute throughout the building. There is currently no chute room on each floor, with the chute accessible via a chute doorway in the hallway on each floor.<br>The waste collection room is located on the north-west corner of the ground floor, adjacent the store and near Hart Avenue and the private entrance lane. There will also be a chute room, located at the chute exit point in the ground floor car park. |

| | |
|---|---|
| **Building Services** | Building services would manage waste movement from the chute room to the waste storage room. Building services would also communicate with commercial collection agencies for waste collection. |
| **Collection Service types** | Collection of the waste generated at the Unley Road Development would be undertaken via a commercial collection, as we understand that the City of Unley does not collect waste at multi-unit dwellings of this size. |
| **Source separation of materials** | We understand that to minimise the number of collections per week, the client may choose to discard cardboard and paper materials into the comingled recycling stream. |
| **Collection point** | All waste collection would occur from the waste collection room in the north-west corner of the ground floor. There is no on-site loading zone for the waste truck. We understand that the preference is for waste trucks to park on the Private Lane, which is owned by the site, while collecting waste. The waste truck would need to reverse into the Private Lane from Hart Avenue, park, load the bins, and drive back into Hart Avenue in a forward direction after collecting waste. The Traffic Consultant would need to confirm swept paths and safe vehicle access for this movement. |

# 3. Design Approach and Assumptions

## 3.1 Policy, Design and/or Operational Requirements

This WMP has been prepared with the following policy, design, and/or operational requirements for waste management in mind:

- The South Australian Environment Protection (Waste to Resources) Policy 2010 (W2REPP) (Government of South Australia, 2011):
    - This Policy requires that waste is subject to resource recovery processes, which can include source separation, before disposal to landfill.
- South Australian Better Practice Guide – Waste Management in Residential or Mixed Use Developments (Green Industries SA, 2014):
    - Identifies need for areas to store waste and recyclable materials, appropriate to the size and type of development, screened from public, which minimises disturbance to residents and provides for service vehicle access.
    - Provides guidance on design of waste management systems for medium to high density residential and mixed use developments.

## 3.2 Estimating Waste & Recycling Services, Volumes and Sizing Storage Areas

This WMP includes an estimate of waste & recycling volumes likely to be generated by the development, which can be found in Section 4 below. The estimation of waste and recycling volumes is based on:

- The proposed land use data;
- Client and regulatory expected services for different land uses in the development; and
- Waste generation metrics found in:
    - The South Australian Better Guide Practice Guide – Waste Management in Residential or Mixed Use Developments (Green Industries SA (previously Zero Waste SA), 2014)
    - Waste and recycling metrics developed by Rawtec, which are based on industry knowledge and experience.

## 3.3 Stream/Service Types Requiring Collection of Drop-Off Options

To achieve effective waste and recycling management at the site, Table 3-1 overleaf outlines the recommended waste and recycling services that should be collected from the development. These recommended services align with SA Better Practice Guide mentioned above, which the City of Unley uses as a guide.

**Table 3-1: Proposed stream/ service types based on land use activity within the hotel**

| | Required/Desired Waste and Recycling Collection Services | | | | |
|---|---|---|---|---|---|
| | **Land Use** | ***Residential*** | ***Commercial*** | ***Commercial*** | ***Commercial*** |
| | | ***Apartments***<br>*Residential (High Density)* | ***Café***<br>*Café/Restaurant* | ***Retail***<br>*Retail (Greater than 100m2)* | ***Office***<br>*Offices or Consulting Rooms* |
| **Service type** | **Waste and Recycling Stream** | | | | |
| **Routine collection** (e.g. rear-lift collection) | **General Waste** | X | X | X | X |
| | **Co-mingled Recycling** | X | X | X | X |
| | **Organics (Food) Recycling** | X | X | X | X |
| | **Cardboard Recycling** | NS | X | X | NS |
| | **Paper Recycling** | NS | NS | NS | X |
| | **Glass Recycling** | NS | NS | NS | NS |
| | **Plastic Recycling** | NS | NS | NS | NS |
| | **Confidential Paper Recycling** | NS | NS | NS | X |
| ***On-call collection** (pick-up by contractor) *or* External drop-off (by building services) | **Hard Waste** | X | X | X | X |
| | **E-waste** | X | X | X | X |
| | **CFL/Lighting** | X | X | X | X |
| | **Printer Cartridges** | X | X | X | X |
| | **Batteries** | X | X | X | X |

X = Required/Desired

NS = Not serviced as not required/desired

Note: 'X' indicates required/desired as per The SA Better Practice Guide – Waste Management in Residential or Mixed Use Developments (Green Industries SA, 2014).

The following waste and recycling streams will not be included within the waste management system:

- E-waste (batteries and printer cartridges etc.) and CFL/Lighting – These waste streams would be either be temporarily stored within the land use area/room where they are generated (i.e. within dwellings) and dropped off at an appropriate external location (e.g. local recycling depot or office supply store) by building services when required, or managed through an external contractor (e.g. for carpark lighting replacement).

# 4. Estimated volumes and storage areas

## 4.1 Estimated volumes

Table 4-1 below identifies preliminary estimates for the total waste and recycling stream volumes generated by the land uses. This table also includes the nominated bin sizes for each waste stream, proposed collection frequency, number of bins required, proposed waste collection service provider, and the location where bins are presented for collection. A table showing estimated waste and recycling volumes generated by individual land uses can be found in Appendix 1.

The below waste volume estimations assume the commercial spaces on the ground floor are for a café, two retail outlets and offices. It also assumes commercial collection for all waste generated at the site.

**Table 4-1: Preliminary estimates of waste and recycling volumes (litres/ week) across all land uses with proposed services and collection frequency**

| Waste stream | Estimated Waste Volume (Litres Per Week)* | Proposed Services | | | | |
|---|---|---|---|---|---|---|
| | | **Bin Size** (Litres) | **Collection Frequency** | **Estimated no. of bins required** | **Proposed waste collection service provider** | **Proposed location where bins/ waste is presented for collection** |
| **General Waste** | 7,995 | 1100 | 3 x per week | 3 + 1 spare | Commercial Contractor (Regular Collection) | Presentation within the waste collection room, adjacent the store room |
| **Co-mingled recycling** | 3,737 | 1100 | 4 x per week | 1 + 1 spare | | |
| **Organics (Food) recycling** | 5,421 | 660 | 3 x per week | 3 | | |
| **Cardboard Recycling** | 2,520 | 660 | 2 x per week | 2 | | |
| **Paper Recycling** | 114 | 240 | 1 x per week | 1 | | |
| **Confidential Paper Recycling** | 13 | 140 | As required | 1 | | |
| **Hard Waste** | 783 | NA (allow 10-15 $m^2$ floor space plus sufficient access to the area) | As required | Not applicable | Commercial Contractor (On call) | At this stage, presentation is in resident apartments. Recommend providing aggregation area on ground floor |
| **E-Waste** | 138 | NA | Residents may dispose of their E-Waste and other hazardous waste via available public drop-off points, or arrange collection by a commercial contractor, which could be conducted with the hard waste collection. | | | |
| **Total** | **20,700 (estimated)** | - | **13 collections per week**** | **13** | | |

**Note: Totals have been rounded to better reflect estimation of the volumes and may not equate*

*** Note: To minimise collections, an option is to place cardboard and paper materials in the co-mingled recycling bins. If this was to occur, co-mingled recycling bins would take approx. 6,400 litres per week, requiring 2 x 1100L bins plus 1 spare 1100L bin (or 2 x 1100L bins and 2 x 660L bins as this may fit better in the waste rooms), and 3 collections per week (rather than the current 7 collections per week). This would reduce the total collections per week from 13 to 9.*

## 4.2 Waste Storage Area and Considerations for the Development

An indicative drawing of the development's waste collection room on the ground floor containing the required number of bins, which includes one example of bin configuration, can be found in Figure 4-1. Our measurements estimate the waste collection room to be approximately 27 $m^2$, with a large door on the south wall. As can be seen in Figure 4-1, the 2 x 1100L general waste bins, 1 x 1100L co-mingled recycling bin, 3 x 660L food organics bins and 2 x 660L cardboard bins fit into the allocated space. The paper and confidential paper bins can be stored in the offices and collected from the offices by the waste contractor. The remaining 2 x 1100L general waste bins and 1 x 1100L recycling bin can be stored in the chute room (see Figure 4-2). Note that an additional 660L food organics bin would also fit in this room if required (see Figure 4-2).

### 1.1.3. Better Practice Considerations for Waste Management

Based on the plans presented at this stage, some key considerations and options for the site from a waste management perspective include:

- The plans provide no allocated space for hard waste storage.
    - It is recommended that 10 – 15 $m^2$ of space be allocated for storage of hard waste prior to collection (based on once a month collection). Building Services can then organise temporary storage of hard waste until it is collected. The Store room may provide this space, but this has not been confirmed.
    - Alternatively, collection may occur directly from apartments. Note that for this to occur, the building services manager, resident and collection contractor would all need to be present, which can be logistically difficult and an inconvenience for the resident. If a 10 – 15 $m^2$ area was provided in the Store room it would be possible to aggregate hard waste on the ground floor, allowing collection for multiple apartments at the same time which can reduce costs while increasing convenience for residents.
- The plans include a single chute for residents to dispose of their waste. This chute exits on the ground floor in the chute room (see Figure 4-2). We understand that this will be a single chute with a diverter, so residents can choose between general waste or recycling. The SA Better Practice Guide indicates that organics (food and/or garden) is a required or expected service for residents and cafés/ restaurants in South Australia. At this stage, food organics bins are available to the café, but not residents. Some options include:
    - Better practice suggests making food organics disposal an option for residents on each floor. This reduces transport distances for residents and the potential for food waste to leak out in lifts while moving the food organics throughout the building. This could be done by adding another chute for food organics, or by providing small (e.g. 80L) food organics disposal bins within a waste room on

each floor. This waste would then be transported to the ground floor for collection by building services via lifts/walkways.

    - An alternative option is to provide residents with access to a food organics bin on the ground floor (e.g. within the chute room). Residents could either access this bin by entering the room where it is located, or via a drop-off window in the hallway (with a bin positioned within a room on the other side of the wall).

- Another consideration is the chute location. In the plans, this is located in the hallway of floors 1 - 6, rather than in an allocated chute room. This may present odour issues and building services may need to clean the chute door on both sides on occasion.
    - An option is to ensure tiling is used below the chute entrance point, to make clean up easier should residents drop/spill their waste before disposing into the chute. Other developments have small chute rooms (a small area behind a door), which can be an effective way to separate waste disposal from the hallway and other residents. Should this option be elected, it is important that consideration is given for access to this room by mobility impaired persons.
- Safe access for Building Services between the chute room and the waste collection room is recommended, as bins are transported across a car park. A pedestrian crossing or allocated pathway for pedestrians and traffic controls between the two rooms would make this pathway safer. Note that it is important to ensure clear access to the waste collection room when transporting the bins. As indicated in section 5.2, these transfer pathways should be free of obstructions and steps, at least 1.25m wide and a slope of no more than 1:10. Obstructions include car parks, as cars may be parked and subsequently block access. A potential access pathway has been provided in Figure 4-3. This pathway does not require access through a carpark. Note that an additional door in the waste collection room would be required on the northern wall, which has been included in Figure 4-1. This access pathway would need to be confirmed by the architect/developer in consultation with the Traffic Consultant and other specialists from relevant disciplines, and then indicated on the plans along with the additional door on the waste room.
- We understand that there are no height restrictions above the waste collection point on the private lane. If there were to be objects above the lane, we recommend a clearance of 4 metres for maximum flexibility in regards to potential waste collection vehicles that can access the site. It is also understood that there is no loading space allocated for the waste collection vehicle. It is recommended that a loading area be allocated for waste trucks to park while collection occurs.
- To allow diversion of the chute in the chute room, it is recommended that the height from ground to ceiling is at least 3 metres.

**Figure 4-1: Preliminary drawing of the waste storage and collection room with an example bin configuration[1]**

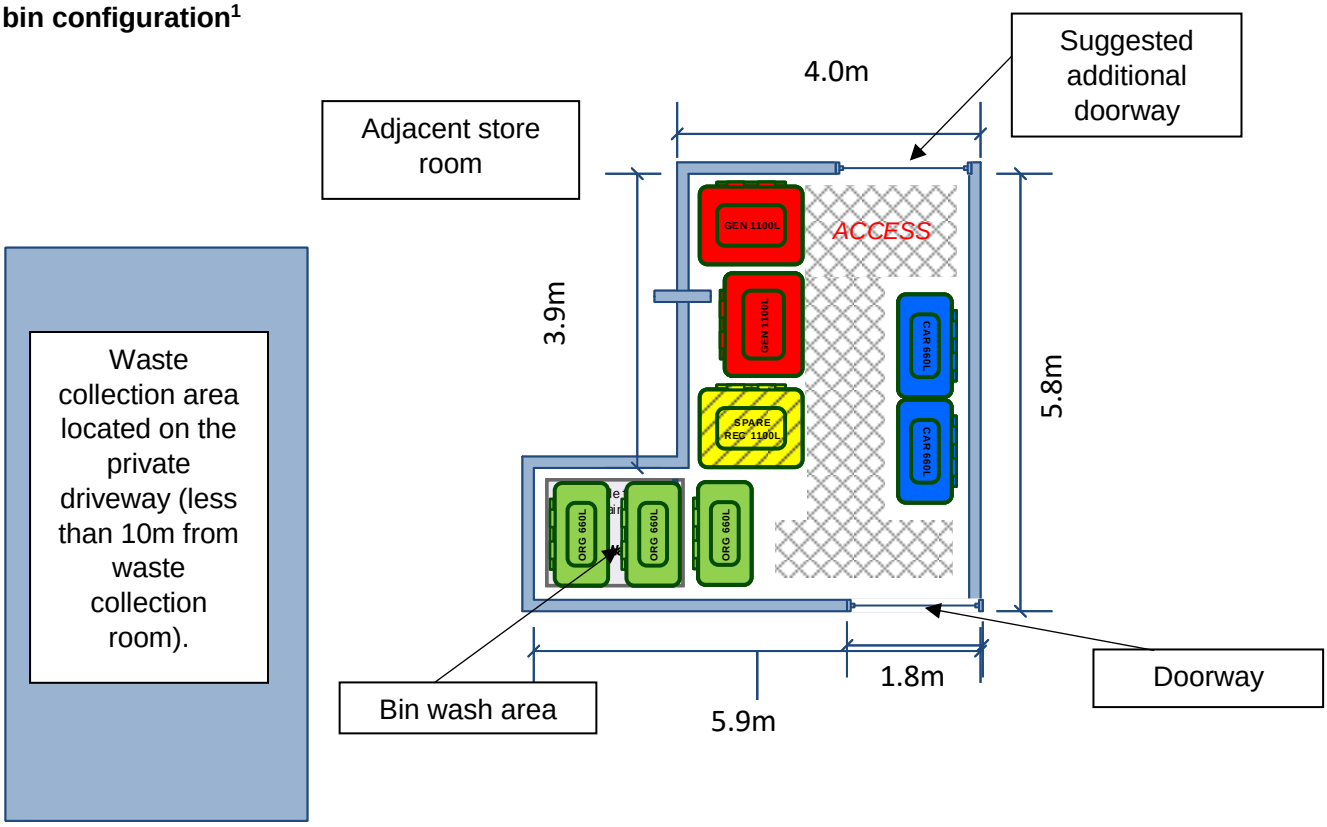
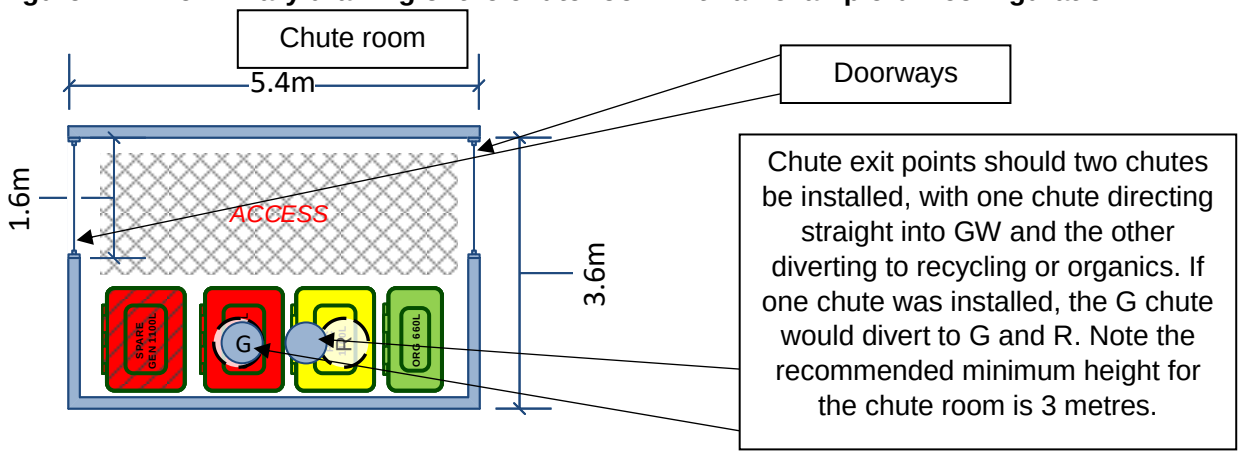



**Figure 4-2: Preliminary drawing of the chute room with an example bin configuration**

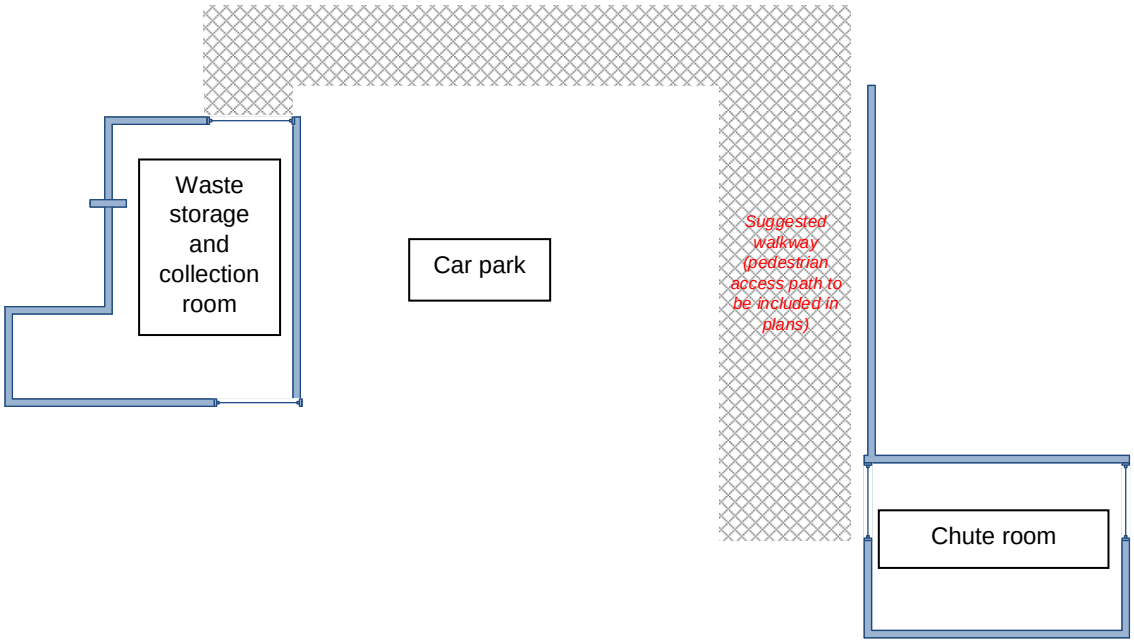



**Note:** These bin sizes are for **illustration purpose only** and are based on the standard MASTEC Australia bin sizes (http://www.mastec.com.au). Bin sizes and shapes may differ depending on manufacturer, collection contractor or local waste authority. Please allow extra room (e.g. >10%) for differences in bin sizes, bin access, opening and closing and manoeuvring etc.

**LEGEND**
**GEN = General Waste**
**REC = Comingled Recycling**
**ORG = Organics**
**CAR = Cardboard**

[1] Note that an additional door (making a total of two doors in the waste collection room) has been included on the northern wall to allow safe access from the chute room to the waste collection room

**Figure 4-3: Suggested access pathway from the chute room to the waste collection room**




## 4.3 Bin Wash Area

A bin wash area is recommended to keep the bins clean and reduce odour. We note that the updated plans include a bin wash area in the waste collection room. For reference, it is recommended the bin wash area:

- Is sloped to a drain leading to the sewer,
- Has an installed tap with mains supply and a hose nearby,
- Is at least 2m x 2m, and
- Is slip resistant to prevent slippage during washing.

Note that line marking and bunding is not required around the bin wash area, and bins can be stored on top of the bin wash area in the waste room. During washing, other bins can be placed outside the waste collection room while bins are washed in the waste room. We have included a potential bin wash area in the indicative drawing above within the waste room (see Figure 4-1).

Please note that alternatively, it is possible for the bin wash area to be installed outside the waste room. It may also be possible for the waste contractor to be contracted to provide this service (either on-site or off-site).

# 5. Waste Management System (WMS)

## 5.1 Overview of the System

To effectively manage the waste generated at the site, an appropriate Waste Management System (WMS) is required. The WMS consists of:

- User storage of waste
- Waste transfer to common disposal area
- Aggregation and storage of this waste
- Waste/bin collection.

The below tables provide an outline of the waste management system for each land use. This is based on the site yield data collected and waste management steps recommended in the South Australian Better Practice Guide – Waste Management in Residential or Mixed Use Developments (Office of Green Industries SA, 2014).

## 5.2 Residents

| | WMS step | WMS Notes |
|---|---|---|
| **Waste storage and transfer pathways for:**<br>• General waste<br>• Co-mingled recycling<br>• Food organics | **1 – User disposal and storage** | • Each apartment would have their own bins consisting of small-medium general waste and recycling bins (e.g. 20-40L), as well as kitchen caddies with compostable bags for food scraps to sort and temporarily store waste. |
| | **2 – Transfer pathway to common disposal area** | • Residents would transfer waste from their apartments to the chute on their respective floor. The chute is located in the hallway to the northern stairwell and the distance from the front door to the chute ranges up to approximately 25 metres.<br>• If two chutes or a food organics bin on each floor were available, residents could dispose general waste, comingled recycling and food scraps on each floor. Alternatively, food scraps would need to be taken to a food organics bin located in the ground floor chute room. This would be accessed via the lift and through the corridor behind the commercial tenancies. Note that the Better Practice Guide recommends common disposal points be no more than 30 metres from front door to disposal point. |
| | **3 – Aggregation and storage** | • The waste would be stored in the chute room on the ground floor and then transferred to the waste collection room on the ground floor by Building Services.<br>• Note that the Better Practice Guide recommends transfer routes be free of obstructions and steps, at least 1.25m wide and a slope of no more than 1:10. |
| | **4 – Waste Collection** | • Waste may be collected via the private lane, less than 10 metres from the waste collection area on the ground floor. Note again that the Better Practice Guide recommends transfer routes be free of obstructions and steps, at least 1.25m wide and a slope of no more than 1:10.<br>• The truck will reverse from Hart Avenue into the private lane, park, load bins to the rear of the vehicle from the waste room, return the bins to the waste room, exit the private lane onto Hart Avenue in a forward direction.<br>• Truck swept paths and potential parking restrictions are to be confirmed by the Traffic Engineer. |

## 5.3 Commercial entities within the building

| | WMS step | WMS Notes |
|---|---|---|
| **Waste storage and transfer pathways for:**<br>• General waste<br>• Co-mingled recycling<br>• Organics (food) recycling<br>• Cardboard recycling<br>• Paper and confidential paper recycling. | **1 – User disposal and storage** | • Each land use would have its own bin station to temporarily store waste.<br>• These bins will be small-medium size (e.g. 40-80L general waste in bags and food organics in compostable bags and cardboard to be placed within the comingled recycling bins within or near the room where it is generated) to sort and temporarily store waste.<br>• Bulky cardboard items can be taken directly to the bin room and disposed of within the 660L cardboard recycling bins.<br>• Offices would store paper and confidential paper recycling in 240L and/or 140L bins in the offices. |
| | **2 – Transfer pathway to common disposal area** | • Staff from each commercial tenancy would transfer the waste from respective premise to the waste storage room on the ground floor.<br>• This would be via the rear hallway and into the car park. |
| | **3 – Aggregation and storage** | • The waste would be stored in the waste collection room on the ground floor. |
| | **4 – Waste Collection** | • Waste may be collected via the private lane, less than 10 metres from the waste collection area on the ground floor. Note that the Better Practice Guide recommends transfer routes be free of obstructions and steps, at least 1.25m wide and a slope of no more than 1:10.<br>• The truck will reverse from Hart Avenue into the private lane, park, load bins to the rear of the vehicle from the waste room, return the bins to the waste room, exit the private lane onto Hart Avenue in a forward direction.<br>• Truck swept paths and potential parking restrictions are to be confirmed by the Traffic Engineer.<br>• Office paper bins would be collected from the offices and loaded into the truck by the waste contractor. |

# 6. Collection Requirements and Vehicle Movements

## 6.1 Collection Vehicle Requirements

The collection vehicles expected for waste collection at this development would generally be:

- Rear-lift trucks – for collection of routine waste, comingled recycling and food organics streams;
- Pan-tech or flat-bed trucks – for collection of at-call waste streams, if required.

Examples of the likely truck dimensions are provided in the Table 6-1 below to assist the Traffic Engineer/Consultant in ensuring that the Service Yard can accommodate the waste and recycling collection vehicles, and that vehicles can enter and exit the area safely.

In addition to the truck length, the parking area will need to accommodate at least 2m behind collection vehicles for waste bin loading.

Collection vehicle dimensions and operating requirements vary between waste collection contractors. The client would be required to ensure that the collection vehicle used by the waste collection contractor servicing the development is able to accommodate for the Service Yard and other requirements before collection can begin.

**Table 6-1: Likely dimensions and turning circles of waste collection vehicles that would be required to access the Service Yard.**

| Likely dimensions and turning circles of waste collection trucks | | |
|---|---|---|
| | **Rear-lift truck (to collect bins up to 1100L)** | **Pan-tech/flat-bed* (to collect hard waste/E-waste)** |
| **Dimensions** | 3.4m (h) x 2.5m (w) x 8m (l) plus 2m space at the rear to load bins | 4.5m (h) x 2.5m (w) x 8.8m (l) |
| **Vehicle height in operation** | Up to 4m | Up to 4.5m |
| **Vehicle turning circle** | 18-25m | 10m |

**Note: Pantech/flatbed vehicle dimensions are based on Australian MRV standard specifications - AS 2890.2-2002*

## 6.2 Estimated number of waste vehicle movements per week

We have estimated that there would be approximately 13 waste collection vehicle movements per week at the site (including paper pick up services). This is based on the estimated waste and recycling volumes and service frequency described above. Note that the total waste collection vehicle movements per week is estimated to be 9 if paper and cardboard was placed in the co-mingled recycling bins, instead of having separate collections for these streams. These estimated vehicle movements do not include an on-call of infrequent services such as hard waste/E-waste collection and confidential paper recycling.

# 7. Supporting Documentation and Design Details

The following information would need to be provided in support of this WMP.

1. Building plans confirming:
    - The size and layout of the waste rooms, including doorways.
    - Transfer pathways for safe and efficient movement of bins/waste between waste rooms and locations for collection.
    - Other land uses.
2. Traffic Consultant to confirm:
    - Parking, loading/unloading and manoeuvring for waste collection vehicles utilising the Service Yard.

# Appendix 1: Estimated Waste Generation Volumes by Land Use and Waste Stream

| | Estimated Waste Generation Volumes (Litres Per Week) by Land Use & Waste Stream (All Land Uses) | | | | | |
|---|---|---|---|---|---|---|
| | **Land Use** | **Residential** | **Commercial** | **Commercial** | **Commercial** | **Totals** (Litres Per Week) |
| | **Development Land Use** | ***Apartments*** | ***Café*** | ***Retail*** | ***Office*** | |
| | *WRGR Classification* | *Residential (High Density)* | *Café/Restaurant* | *Retail (Greater than 100m2)* | *Offices or Consulting Rooms* | |
| **Waste Stream** | **General Waste** | 3,400 | 3,200 | 1,300 | 200 | 8,100 |
| | **Co-mingled Recycling** | 2,800 | 500 | 300 | 100 | 3,700 |
| | **Organics (Food) Recycling** | 1,100 | 4,200 | 60 | 40 | 5,400 |
| | **Cardboard Recycling** | NE | 1,600 | 900 | NE | 2,500 |
| | **Paper Recycling** | NE | NE | NE | 100 | 100 |
| | **Glass Recycling** | NE | NE | NE | NE | 0 |
| | **Plastic Recycling** | NE | NE | NE | NE | 0 |
| | **Confidential Paper Recycling** | NE | NE | NE | 10 | 10 |
| | **Hard Waste** | 800 | NE | NE | NE | 800 |
| | **E-waste** | 100 | NE | NE | NE | 100 |
| **Total Site Volume** (Litres per Week) | | **7,300** | **9,500** | **2,600** | **500** | **20,700** |

**Note: Totals have been rounded to better reflect estimates and may not equate*

NE = Not Estimated as Not Required

LUCID
CONSULTING AUSTRALIA

# UNLEY DEVELOPMENT,
# 246 UNLEY ROAD, UNLEY

Project No: LCE13020

# Building Services Design Report

**DOCUMENTATION ISSUE REGISTER**

| REVISION | DESCRIPTION | DATE ISSUED | ENGINEER | REVIEWED |
|---|---|---|---|---|
| A | Draft Issue | 16/06/2017 | PC / JZ | - |
| B | Planning Issue | 07/07/2017 | PC / JZ | - |

**CONTENTS**

**1 INTRODUCTION ..... 2**
1.1 BUILDING DESCRIPTION ..... 2
**2 AUTHORITIES ..... 3**
2.1 SA POWER NETWORKS ELECTRICAL SUPPLY ..... 3
2.2 COMMUNICATIONS ..... 3
2.3 SA WATER CORPORATION ..... 3
2.4 APA GROUP NATURAL GAS INFRASTRUCTURE ..... 3
**3 BUILDING SERVICES ..... 4**
3.1 ELECTRICAL SERVICES ..... 4
3.2 FIRE SERVICES ..... 4
3.3 HYDRAULIC SERVICES ..... 4
3.4 MECHANICAL SERVICES ..... 5

# 1 INTRODUCTION

## 1.1 BUILDING DESCRIPTION

The project involves the development of the existing site at 246 Unley Road, Unley comprising of ground floor retail tenancies and 6 floors of apartments. A total of 59 apartments are proposed.

Based on project design team meetings we understand that the breakdown of the building will generally be as follows:

| Building Level | Building Function |
|---|---|
| Basement 1 and 2 | Services plant areas |
| | Carparking |
| | Bike store |
| | Amenities |
| Ground | Residential Entrance Lobbies |
| | Transformer Enclosure |
| | Residential and Commercial Bin Rooms |
| | Carparking |
| | Bike store |
| | Amenities |
| | Retail Tenancies |
| Level 1 - 5 | Apartments (11 off per level) |
| Level 6 | Penthouse Apartments (4 off) |

# 2 AUTHORITIES

## 2.1 SA POWER NETWORKS ELECTRICAL SUPPLY

The permanent power supply to the site shall be sourced from a new high voltage (HV) extension along Unley Road from the existing HV supply located on Cremorne Street to the site. The site will be supplied via a new SA Power Networks transformer located on the south-eastern corner of the site in a purpose-built transformer room to the requirements of SAPN.

## 2.2 COMMUNICATIONS

NBN Co have confirmed that an NBN connection can be provided to the site. Alternative communication services solutions to NBN shall be considered prior to entering into an agreement with NBN.

## 2.3 SA WATER CORPORATION

### 2.3.1 SEWER INFRASTRUCTURE

SA Water Corporation (SAWC) have been requested to investigate the capacity of the existing waste water (sewer) infrastructure adjacent the proposed development site, based on approximate increased fixture loading for the planned development. A formal response is due in July.

Preliminary assessment indicates that 2 x 150mm new sewer connections will be required to service the site via connections to the 150mm sewer main in Hart Avenue or the 450mm VC sewer main in Unley Road. All new sewer connections will incorporate a government inspection point in the adjoining footpath. An existing connection (believed to be 100mm) will be disconnected as part of works.

### 2.3.2 DOMESTIC COLD WATER INFRASTRUCTURE

SA Water Corporation (SAWC) have been requested to investigate the capacity of the existing town water mains infrastructure adjacent the proposed development site, based on approximate increased site peak water demand for the planned development. A formal response is due in July.

The existing buildings are currently serviced via water meters with connections (size unknown) to the 100mm and 200mm mains in Hart Avenue and Unley Road respectively. Existing water meters will be disconnected by SAWC following temporary use to serve builder's site amenities.

Preliminary assessment indicates that a 50mm water meter and connection will be required to service the planned development. The water meter will be housed in a cast iron footpath boxes by SAWC. The incoming water main extending from the proposed new 50mm water meter will extend to a break tank and associated domestic cold water pressure pump assembly, which will be utilised to service all floors.

A 150mm fire services connection is proposed off the 200mm main in Unley Road to service on site booster assembly, attack hydrants located within stairwells and sprinkler system.

## 2.4 APA GROUP NATURAL GAS INFRASTRUCTURE

A medium pressure 80mm cast iron gas main is located in Hart Avenue, and an existing 100mm cast iron gas main is located in Unley Road. A new tapping is proposed to be derived from the 80mm diameter main in Hart Avenue which will extend to a gas meter enclosure facing onto Hart Avenue. APA Group have confirmed that the natural gas infrastructure in Hart Avenue has adequate capacity to cater for the development's natural gas loading.

# 3 BUILDING SERVICES

## 3.1 ELECTRICAL SERVICES

- Electrical distribution systems including consumers mains, main switchboard, submains and distribution boards.
- Electrical authority transformer.
- Retailer metering
- Lighting control system
- Exit and emergency lighting system complying with the requirements of AS2293.
- Electronic security and access control systems.
- NBN fibre optic network infrastructure servicing the apartments
- Reticulated MATV system to apartments
- Audio and visual intercom system apartments.
- PV solar collection system to generate power for the building common areas.

## 3.2 FIRE SERVICES

- Fire hydrants generally located within the fire isolated stairs, providing coverage to all areas of the building.
- Automatic fire sprinkler systems to AS1670 in carparks, retail tenancies and apartments.
- Smoke detection system throughout for activation of the smoke control system and early activation of the occupant warning systems.
- Fire hose reels and portable fire extinguishers.
- Interfaces with other services for control of building fire mode operations.

## 3.3 HYDRAULIC SERVICES

- Connection to SA Water Corporation Authority water and sewer infrastructure
- Connection to APA Group Authority gas infrastructure including gas meter enclosure
- Sanitary drainage system extending from authority connections to serve apartments, base building amenities and ground floor retail tenancies.
- Trade waste drainage system serving ground floor retail tenancies (where required) and extending to inground pre-treatment devices on Basement Level.
- Domestic Cold Water Break Tanks and Boost Pumps for building water reticulation.
- Central Hot Water Plant for hot water supply to apartments.
- Hot/Cold reticulation to all areas of the development including back flow prevention in accordance with AS/NZ 3500 and sub water meters to apartments.

## 3.4 MECHANICAL SERVICES

- Provision of mechanical carpark exhaust system to the basement carpark utilising carbon monoxide (CO) sensors for fan on/off and variable speed control.
- Supply and exhaust systems to plant, Back of House (BOH) and amenity areas as required
- Provision for air conditioning to Retail tenancies
- Provision of air conditioning to each apartment
- Provision of exhaust systems to serve toilet, laundry and kitchen areas of each apartment
- Natural ventilation of each above ground car park level with assistance of supplementary mechanical ventilation as required to achieve compliance

Think beyond the square

ESD and Sustainability Consultants
Master Planning
Resource Management
Strategic Advice
Governance
Advocacy

# 246 Unley Road, Unley

# ESD Report
# Development Approval

D Squared Consulting Pty Ltd
Trading as dsquared
ACN 159 612 067
ABN 38 159 612 067

Suite 5, 241 Pirie Street
Adelaide SA 5000

Contact: Deborah Davidson
T: 0425 870 289
E: deborah@dsquaredconsulting.com.au

green building council australia
MEMBER 2016-2017

## Document Control

| Issue | Date | Change | Checked | Approved |
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| 1 | 8/06/2017 | First draft issue for review | PD | DD |
| 2 | 7/07/2017 | Final report | PD | DD |
| 3 | 13/07/2017 | Amendment for DA | PD | DD |
| 4 | 2/08/2017 | Updated NatHERS | PD | DD |
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Contents

1 Introduction ..... 4
1.1 ESD Summary ..... 4
2 ESD Initiatives ..... 5
2.1 Energy and Green House Gas Emissions ..... 5
2.2 Water, Waste Water, and Stormwater ..... 6
2.3 Waste ..... 6
2.4 Indoor Environment Quality ..... 6
2.5 Construction ..... 6
2.6 Transport and Social Sustainability ..... 7
3 Sustainability Benchmarks ..... 8
3.1 Sustainability Rating Tools ..... 8
3.2 Energy Benchmark ..... 8
3.3 Water Benchmark ..... 8

# 1 Introduction

This document describes the Ecologically Sustainable Design (ESD) Vision which will be applied to the residential development at 246 Unley Road, Unley, and the ESD strategies which will be employed to reduce the project's impact on the environment in both construction and operation.

This report is based on a review of the building design prepared by Tectvs Architects and the commitments made at planning stage by the client.

The report has been prepared by Deborah Davidson, a Director of consultancy firm dsquared. Deborah has over 15 years' experience in sustainability and building design in the UK and Australia. She has been involved in some of Adelaide's most significant urban master plans and new buildings, including several Green Star ratings for residential buildings at Bowden and in the Adelaide CBD.

## 1.1 ESD Summary

The project is being designed to be energy and water efficient, whilst achieving a high level of thermal comfort for future occupants. It is anticipated that residents will have energy utility bills approximately 50% lower than a standard residential apartment.

The dwellings are designed to achieve a 7 Star average National House Energy Rating (NatHERS), which is a significant improvement over the National Construction Code minimum of 6 Stars. This is being achieved through a combination of good passive design (cross ventilation and daylight control) and good quality building materials.

Priority is being given to durable, sustainable and local products where possible.

Public spaces are being designed to encourage social interaction and connection with the environment through green spaces and productive gardens.

# 2 ESD Initiatives

## 2.1 Energy and Green House Gas Emissions

The following energy initiatives are proposed:

- Passive design - each elevation and the building orientation has been considered separately and glazing and facade treatments optimised, with external shading used to minimise summer solar gains.
- Cross ventilation to all apartments though opening above doors.
- All dwellings will be provided with opening windows and doors to allow full natural ventilation as required by the occupants.
- Glazing to be double glazed with large overhangs from balcony above.
- Selection of energy efficient lighting fittings (LED) with automated lighting control systems to common areas.
- Air conditioning using high efficiency ducted reverse cycle systems. Ensure fan setting to allow distribution of air without heating/cooling energy use when not needed.
- Centralised hot water generated by a gas boosted system.
- Induction cooktops.
- Energy efficient dishwasher and internal clothes drying space.
- Extensive metering and sub-metering for energy management, connected to a fully integrated Energy Management System.
- Demand controlled car park ventilation systems with inverter controlled variable speed fans and carbon monoxide sensor control.
- Using light coloured external finishes (in particular roof coverings) to reflect heat and reduce solar gain, and reduce the heat island effect.
- Using zero ODP refrigerants and insulation.
- PV array on roof to power common areas.
- Provide a battery connection to support use of renewable energy to common areas.
- Infrastructure will be included to allow for connection to an embedded network if deemed beneficial to future residents.

## 2.2 Water, Waste Water, and Stormwater

The following water initiatives are proposed:

- Rainwater will be captured in two storage tanks at ground level and used for landscape irrigation.
- Water efficient fittings with the minimum WELS ratings:
  - Taps 6 Stars
  - WCs 4 Stars
  - Showers 3 Stars
- Stormwater systems designed such that historic peak stormwater outflows should not be exceeded, and all stormwater is appropriately treated before discharge to sewer.

## 2.3 Waste

- The common waste storage area has bins for:
  - General Waste
  - Glass, plastic and paper recycling
- Each floor includes a waste chute with segregation at source for waste and recycling.
- Each kitchen will be designed to accommodate split bins for general, recycling, and compost waste.
- Organic waste, compost, e-waste and bulky waste will be collected as required, in accordance with the project Waste Management Plan prepared by Rawtec.

## 2.4 Indoor Environment Quality

The following indoor environment initiatives are proposed:

- Using paints, sealants, adhesives, carpets, and other coverings which have low off-gassing properties (low VOC, low formaldehyde).
- Maximising access to daylight to all living areas (including translucent glazing to kitchen splashbacks) whilst minimising glare to all dwellings.
- All dwellings will be provided with opening windows and doors to allow full natural ventilation as required by the occupants.

## 2.5 Construction

The following construction initiatives are proposed:

- Selecting locally sourced materials wherever viable.
- Selecting materials with a comparatively low embodied energy/carbon profile, wherever viable.
- Selecting building materials with a recycled material content e.g. thermal insulation, reinforcement bar, and recycled content floor coverings, wherever viable.

- Utilising an Environmental Management Plan and Environmental Management System (EMS) that is certified to ISO 14001 standards.
- Managing construction waste (including demolition) such that a minimum of 90% of all waste (excluding soil, contaminated waste, and green waste) is diverted from landfill.

## 2.6 Transport and Social Sustainability

The following transport and social sustainability initiatives are proposed:

- Utilise courtyard space for edible plants, vegetable gardens, fruit trees (where viable), alongside areas for socialising and rest.
- Accessible apartments should follow Liveable Housing guidelines (Silver level)
- Include bike parks within apartments and visitor parking.
- Include connection for future e-charging for cars.

# 3 Sustainability Benchmarks

## 3.1 Sustainability Rating Tools

**NatHERS**

The development is designed to achieve a 7 Star average NatHERS rating, which is a significant improvement over the code minimum of 6 Stars.

**Green Star**

The development is not seeking a Green Star rating. However, the project team has recent experience of a Green Star rated residential building and has adopted many of the successful ESD initiatives from this project into the sustainability strategy for the Unley development.

dsquared have carried out a self-assessment of the development using the Green Star Design & As Built v1.1 tool and believe that this project has the potential to obtain equivalent to a 5 Star rating.

## 3.2 Energy Benchmark

Based on the energy initiatives listed above, it is expected that the dwellings will have an annual energy usage of approximately 50% of a standard NCC compliant home. Note that this does not allow for internal equipment loads and occupant behaviours.

## 3.3 Water Benchmark

Based on the water initiatives listed above, it is expected that the dwellings will have an annual water usage of approximately 30% of a standard NCC compliant home.

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| | |
|---|---|
| Date Issued | **Friday, 7 July 2017** |
| Job No | DT 170510 |
| Site | 244-246 UNLEY ROAD, HYDE PARK |
| Client | COMMERCIAL & GENERAL |
| Proposed | 7-STOREY with UNDERCROFT RESIDENTIAL DEVELOPMENT |

# STORMWATER MANAGEMENT REPORT

108 Wright Street Adelaide 5000
T: 08 8231 6000 | F: 08 8231 3444
E: civil@structuralsystemssa.com.au

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STORMWATER MANAGEMENT REPORT

## INTRODUCTION

Structural Systems Pty Ltd has been engaged by Commercial & General to prepare a stormwater management report for the proposed residential development at 244-246 Unley Road, Hyde Park.
The purpose of this report is to assess the stormwater control of the site. It covers the assessment of the stormwater runoff before and after the development, and the possible impacts to the Council drainage system.

## SITE LOCATION AND PROPOSED DEVELOPMENT

The subject land is located within the City Of Unley Council district and is situated at the corner of Unley Road and Hart Avenue, Hyde Park. The eastern frontage of the site is facing Unley Road, while the northern side is facing Hart Avenue. The southern and western sides of the property are bounded by an existing shop and an existing residential property respectively. The site currently consists of a row of shops facing Unley Road with a communal driveway at the rear, and a single storey dwelling facing Hart Avenue. All existing structures are to be demolished to accommodate the proposed development of a seven storey residential apartment building with two level basement carpark.

## SITE TOPOGRAPHY

The fall of the site is a gentle fall from South East toward Norh West direction. The existing levels at boundaries are similar to the neighbouring Western and Southern sides. The Councils eastern side footpath sloping along Unley Road South–North direction is approximately 1:100 fall towards the North. The Council's northern side footpath sloping along Hart Avenue East–West direction is approximately 1:170 fall toward the West.

The highest Kerb Water Table level at property road frontage is approximately 47.02 at Unley Road.

The lowest Kerb Water Table level at property road frontage is approximately 46.23 at Hart Avenue.

## STORMWATER

### Hydrology

For this site, the rational method was used to determine the stormwater runoff and peak discharge for a 1 in 10 year ARI pre-development storm event and a 1 in 10 year ARI post-development event. The rational method calculates the peak flow at an outlet point. The peak flow can be defined as $Q = C*I*A$.

Where C is the runoff coefficient, I is the average rainfall intensity appropriate for the time of concentration, and A is the catchment area. The time of concentration “tc” is defined as the travel time for flow from the most remote part of the catchment to reach the outlet, or the time taken from the start of the rainfall event until all of the catchment is simultaneously contributing to the outlet.

The estimated time of concentration for this site is 7 minutes.



108 Wright Street, Adelaide SA 5000
P 8231 6000 civil@structuralsystemssa.com.au F 8231 3444

**Existing Site Conditions**

The total site area is estimated as: A = 2482m$^2$

The site currently has a high percentage of roof cover, comprising of the shops and the existing house roofs. The total roof area is estimated as 1826m$^2$.

The uncovered area of the site consists of pervious and impervious surfaces, with the impervious paving areas making up an estimated 461m$^2$, while the remaining 196m$^2$ of the site can be considered as pervious area. The total percentage of impervious area of the site is approximately 97%.

**Proposed Development**

The proposed development has a slightly less roof area, whilst having an increase in paving area.
Proposed roof and balcony area: 1244 + 608 m$^2$
Proposed paving area: 351 m$^2$
The total percentage of impervious area is approximately 99%.

Based on the calculated impervious surface, there are some changes in the impervious surface between the pre-development and post-development conditions for this site, and therefore it is expected that the stormwater runoff volume and flow rate will slightly increase between pre and post development.

**Catchment Runoff Coefficient**

The following runoff coefficients have been adopted for the design calculations:
First class impervious area (roof & balconies): C10 = 0.9
Second class impervious area: C10 = 0.75
Pervious area: C10 = 0.1

Based on the adopted runoff coefficients and measured catchment area, the equivalent runoff coefficient for the full site for a 1 in 10 year ARI storm event is as below:

For pre-development: Cequiv = 0.85
For post-development: Cequiv = 0.87

**Estimated Peak Total Discharge Rate**

The pre-development discharge rate for the whole site is calculated as:
$Q_{10}$ pre = $C_{10}$ * $I_{10}$ 7mins * A / 0.36
. = 0.85 * 85.10 * 0.2213ha / 0.36
. = 44.33 L/s

The post-development discharge rate for the whole site is calculated as:
$Q_{10}$ post = $C_{10}$ * $I_{10}$ 6mins * A / 0.36
. = 0.87 * 85.10 * 0.2213ha / 0.36
. = 45.68 L/s



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There is a slight increase in the peak flow rate of the site between post-development and pre-development conditions, and therefore it can be predicted that even without any new stormwater improvement systems installed, the proposed development will have minor impact to the Council stormwater system.

## COUNCIL STORMWATER MANAGEMENT REQUIREMENTS

The following conditions are extracted from "City of Unley – Development and stormwater management design guide". The full document can be obtained from the Council

*The guideline seeks to show how developments can accomplish:*

*reduced peak stormwater flows and improved flood management*
*stormwater detention, retention, re-use and ground infiltration*
*stormwater quality improvement for surface and ground waters*
*improved micro climate benefits and reduced heat island affects, through enhanced streetscapes, landscaping and increased urban greening.*

*For the effective and practical implementation of the standard provisions of the Development Plan, Building Code and best practice standards as outlined in this Guide, it is required that:*

*stormwater runoff generated from impervious areas discharged from the site is to be less than current pre-development conditions using a volumetric 5 year ARI 45 min event*
*Impervious surfaces are to be less than the equivalent of 40% for residential areas and 80% for commercial areas*
*a minimum 1,000L retention tank for residential development, however larger volumes are typically required for applicable development to enable more effective and efficient utilisation of the investment and availability of water for re-use (Refer Table 3.1).*
*stormwater runoff to be treated to remove 90% of gross pollutants, 80% suspended solids, 60% total phosphorous, and 45% total nitrogen of the typical urban stormwater annual load. These requirements apply to larger developments (Commercial developments), to car parks of equal to or greater than 6 parking spaces, as well as large areas of hard paving (> 20m2).*

Table 3.1 (Appendix 1) has been extracted from the design guide, and provides the following requirements:

The development has an allotment size of 1501-2000m$^2$ and falls into the Apartment Buildings / Commercial site categories, and hence requires:

| | |
|---|---|
| Retention Rainwater Harvest Tank (L): | 12000 L |
| Detention Storage (L): | 8000 L |
| Total Stormwater Storage Volume for Site: | 20000 L |



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P 8231 6000 civil@structuralsystemssa.com.au F 8231 3444

The following has been extracted from the Council document "Specification – Modification to Property Access Stormwater, Cross over and Footpath"

1 *The size of the drain may be a maximum of 80mm diameter PVC Pressure Pipe Class 12.*

*Where the volume of water to be discharged at a single outlet exceeds the capacity of a 80mm stormwater pipes (or the area drained per outlet exceeds 350 square meters) and no underground drainage is adjacent to the site then a second 80mm stormwater pipe or a rectangular section steel drain must be provided in accordance with the Council Drawings.*

Based on the above requirement, the maximum discharge rate is estimated as 4L/s for a single pipe outlet and 8L/s for a dual pipe outlet. Without a connection to the Council underground stormwater system, the discharge to the street water table must be divided into multiple outlet points to avoid exceeding the allowable discharge rate at each outlet.

Other general relevant Council requirements are shown in Appendix 2, an extract from "City of Unley – Development and stormwater management design guide" chapter 2.4. To satisfy Council requirements, the proposed development will have to improve flow rate and water quality.

## STORMWATER MANAGEMENT

### Stormwater Runoff Volume

The proposed development has some increase in impervious area when compared to the existing site, but the total site area is unchanged. Because of this, the volume of the runoff is increased slightly for any storm event with any duration.

By installing a large retention tank, the runoff volume will be reduced drastically as stormwater collected by the tank is to be reused for irrigation and landscaping throughout the development. This will also reduce the need for using main water for irrigation. Therefore, it is satisfying the Council requirement regarding the runoff volume.

### Stormwater Runoff Flow Rate

Similar to above, the peak discharge flow rate will be very similar between pre and post development conditions. However, the Council requires the discharge rate of new developments not to exceed the discharge rate corresponding to the equivalent site with 80% impervious area. To meet this requirement, a detention tank is proposed.

The estimated discharge rate from the same site with equivalent 80% impervious site cover is calculated as:

- For 7 minutes duration, 1 in 10 year ARI storm event: Q10 = 38.7 L/s.
- For 7 minutes duration, 1 in 100 year ARI storm event: Q100 = 81.7 L/s.



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Its recommended the detention tank be an above ground tank which discharges to the street water table via a gravity feed pipe system, with a restriction orifice to limit the flow to meet Council requirements. An above ground tank has the advantage of ease of installation and is simple to maintain during its service life.

To accommodate the design outflow rate, the discharge is to be distributed to five outlet points, and at each point the discharge rate is to be at or below 8L/s during the most critical 1 in 10 year ARI storm event. The design intention is to provide two discharge outlets the Unley Road street water table and three outlets to the Hart Avenue water table.

Referring to the attached design calculations, the designed detention tank size is 14000L with 12000L use for detention, which is larger than the Council minimum requirement. For the preliminary proposed tank size, the required orifice size for each tank is 72mm diameter. An alternative tank size and setup can be substituted for the nominated tank, however the design retention and detention volume must be maintained and the maximum total design discharge rate must be not exceed the allowable discharge rate as outlined above.

**Water Quality**

The stormwater runoff from the proposed development site is mostly from roof surface, while a small portion is from the common driveway. The expected contaminants are comprised of: gross pollutants (trash, packaging, cigarette butts etc.), dust and other smaller particles, and hydrocarbon from cars (oil and grease).

Most activities that are the source of phosphorus and nitrogen in runoff water are contained to internal building spaces. Common examples include laundry waste, pet waste and fertiliser. This contaminated water does not contribute to stormwater runoff as it is collected and discharged to a separate sewer system, and the pollutants are treated and removed at a sewer treatment plant.

Another common source of phosphorus and nitrogen is from tree leaves. As the percentage area of landscaping is very small compared to the site area and there are no large trees within the site, it is reasonable to expect the levels of nitrogen and phosphorus in the stormwater runoff to be very low.

Due to the site constraints, it is not practical to adopt a treatment system that requires a large footprint and is costly to operate to treat the low amount of phosphorus and nitrogen expected in the stormwater runoff. It is a sensible approach to use a water quality improvement system that targets the main pollutants (gross pollutants, suspended solids and hydrocarbon) at the source.

Prenco Drain Warden units are recommended to be installed in all grated sumps within the site to capture these target contaminants. These units can be serviced and maintained regularly by the site occupant without the need for expensive and specialised equipment.



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P 8231 6000 civil@structuralsystemssa.com.au F 8231 3444

## Groundwater

There is one and a half levels of underground car parking in the proposed development and it is expected that there will be some groundwater collected at the retaining structure. The collected groundwater will be directed to a pump, and pumped to the sewer system to the service engineer's documentation and SA Water approval.

## Safeguard Against 1 in 100 year ARI Major Storm Event Flow and gutter flow entry to property

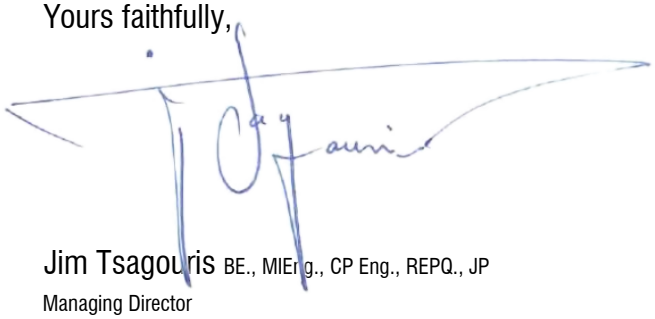
Based on the Draft flood mapping: 100 year ARI base case - figure 2 and 100 year ARI flood mapping for 2011 stormwater management plan – figure 28, the subject site locates just outside the flood zone. The different in height from high side to low site of the site is approximately 800mm. And the site does not slope away from the road by grade of more than 5%. Generally, the site slope toward the road.

Council requirement regard the protection against inundation is adopted. All Finished Floor Level are minimum 300mm above the street water table level.

Driveway and property levels along the property /road reserve boundary are minimum 100mm above adjacent street top of kerb.

Heavy duty grated strip drains are provided at the bottom of the access ramp to ensure any excess water runoff is captured and directed to the appropriate outlet.

Yours faithfully,



Jim Tsagouris BE., MIEng., CP Eng., REPQ., JP
Managing Director
STRUCTURAL SYSTEMS PTY LTD

**APPENDIX**

- Stormwater Detention Calculations
- Site Plan
- Appendix 1
- Appendix 2 + 2(2)

**REFERENCES**


- **"City of Unley – Development and stormwater management design guide"** https://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwialKG479fUAhVGNpQKHdkXAlYQFggoMAA&url=http%3A%2F%2Fwww.unley.sa.gov.au%2FCityOfUnley%2Fmedia%2FCoU-Media-Library%2FPlanning%2520and%2520Development%2FBuilding%2520and%2520Renovating%2FCity-of-Unley-Stormwater-
- **City of Unley Flood Mapping** http://www.unley.sa.gov.au/webdata/resources/files/FloodMapping.pdf.
- **FLOODING IN THE CITY OF UNLEY FREQUENTLY ASKED QUESTIONS (FAQs)** http://www.unley.sa.gov.au/webdata/resources/files/Flooding_FAQs.pdf

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## 2.4 Stormwater Management Guidelines

The stormwater management plan shall be developed using the principles of Australian practice, Australian Rainfall and Runoff and the Building Code requirements. In addition, the Development submission shall consider where relevant the requirements listed in the table below. The requirements are in accordance with the City of Unley Development Plan. The adoption and sizing of WSUD elements refers to the acceptable solutions in Sections 3 and 4. A process to prepare your stormwater management plan is provided at the end of this Section. The next page provides a flow chart for the process to prepare your stormwater management plan.

| GENERAL REQUIREMENTS | GUIDELINES | REFERENCE |
|---|---|---|
| 1. New development will be required to control runoff for a 5yr ARI event. | • New developments must control stormwater runoff for a 5 year ARI event | Refer to Section 3 for storage size / volume requirements based on development area for the relevant case. |
| 2. No run-off shall be directed from the development site to adjacent properties. | • Runoff shall be controlled on site up to a 1 in 20 year ARI event.<br>• Paved area runoff should be directed into landscape areas and controlled to prevent it entering adjacent properties | |
| 3. Site discharge rate shall be discharged at controlled pre-development rate* or retained on site. | Methods of Detention / Retention<br>• Rainwater harvesting tanks<br>• Detention tank<br>• Soakage swale<br>• Soakage Trench or well(s)<br>• Permeable Paving<br>• Rain garden | Refer to Sections 3 for storage size / volume requirements based on development area for the relevant case.<br>Refer to Section 4 for WSUD elements |
| 4. The floor levels shall be designed to provide 100 -year ARI protection against inundation | • This applies to a 100 year ARI storm over the development site and from street or watercourse<br>• If the site does not slope away from the road by a grade of more than 0.5%, all finished floor levels shall be a minimum of 300mm above the street water table level (taken at the midpoint of the property frontage). | Check if site is located within a flood prone area. Refer to Council for advice. |
| 5. Measures shall be incorporated within the proposed development boundary to prevent gutter flow entry to property. | • Driveway and property levels along the property/road reserve boundary shall be specified at least 100mm above the adjacent street top of kerb. | |
| 6. Measures shall be incorporated in all development to ensure no stormwater borne pollutants (including litter, silt and any harmful substances) are discharged into Council's drainage system. | • Use stormwater treatment devices that are installed within the development to remove solid and liquid pollutants, prior to discharge to Council's drainage system. For car parks exceeding 150m$^2$ a suitably sized stormwater quality device is required. Using green initiatives is encouraged. | Refer Section 4 for the relevant case. |
| 7. Soakage systems shall be appropriately located, and provide effective detention / retention. These systems shall be environmentally appropriate for the site and soil conditions. | Soakage systems:<br>• Shall not be located within 6m of any structural footing or property boundary.<br>• Shall not be located on ground sloping more than 1 in 10.<br>• Shall collect only roof runoff (and include leaf and sediment interceptor)<br>• Shall collect surface runoff from paved areas that have first been intercepted by a silt and debris trap and or a lawn area.<br>• Shall be demonstrated to be empty within 1.5 days after a 1 in 5 year ARI 45 minute storm.<br>• Shall incorporate an overflow for exceedance of the storage capacity<br>• Bore logs required | Refer to Development Act 1993 Ministers specification SA78AA (Planning SA 2003)<br>Bore logs required as part of approval process.<br>Refer to WSUD Basic procedures for source control of stormwater Argue, J) |
| 8. When pump system failure may result in inundation of any building or adjacent property, measures shall be incorporated to minimise the risk of failure during a storm. | If failure of the pump system is likely to result in flooding of a building, under-croft or adjacent properties then the following shall apply:<br>• Two pumps shall be provided, each capable of the design flow rate.<br>• The pumps shall be configured to automatically alternate as the duty pump.<br>• The system shall be configured to automatically revert to the alternate pump should the duty pump fail.<br>• Either a back–up power supply or incorporate storage (in pump chamber and/or above ground) with a volume equal to a 100 year ARI 30 minute event or as negotiated with Council.<br>Run-off without pump operation and without flooding of buildings, under-crofts or any properties shall be demonstrated and accommodated to discharge safely to street. | |
| 9. All works necessary beyond the property boundaries shall be to Council's requirements and standard details. | All works (e.g. connections across Council's footpath and connection to Council's drains) should be underground, and should meet Councils requirements and standard details. | Refer to Council standard details. |
| 10. All drainage infrastructures within the development site shall be maintained, serviced, cleaned and sustained operational for the life of the development to by the owner. | | |

** Pre-development rate – Pre-development rate has been determined based on traditional residential allotment with 40% impervious surface*

APPENDIX 1

APPENDIX 2

Table 3.1: Stormwater Detention and Retention Requirements for developments

| Area of Allotment ($m^2$) | | Storage Method: Retention Rain Water Harvest Tank, RWH (L) | Storage Method: Detention Storage, DS (L) | Total Stormwater Storage Volume for Site, SSV (L) | Maximum Discharge Rate to Kerb* (L/s) |
|---|---|---|---|---|---|
| **Single Residential Dwellings/Town houses (Total storage requirements per allotment area)** | | | | | |
| Up to 400 | | 2000 | 1000 | 3000 | 4 |
| 401-500 | | 2000 | 1500 | 3500 | 4 |
| 501 – 600 | | 2500 | 1500 | 4000 | 4 |
| 601 – 700 | | 2500 | 2000 | 4500 | 4 |
| 701 – 800 | | 3000 | 2000 | 5000 | 4 |
| 800 + | | 3500 | 2500 | 5500 | 4 |
| **Extensions to residential dwellings (>50$m^2$ roof area) (Total storage requirement per new roof area created)** | | | | | |
| 51 - 100 | | 2000 | 1000 | 3000 | N/A |
| 101 - 150 | | 2500 | 1500 | 4000 | N/A |
| 151 - 200 | | 3000 | 2000 | 5000 | N/A |
| 201 - 250+ | | 3000 | 2500 | 5500 | N/A |
| **Multi-Unit Developments Comprising of 3-5 Units (Allotment area, number of dwellings, and storages per dwelling)** | | | | | |
| Up to 1000 | 3 | 2000 | 1000 | 3000 | 4 per outlet |
| 1001 – 1500 | 3 | 2500 | 1500 | 4000 | 4 per outlet |
| | 4 | 2000 | 1000 | 3000 | 4 per outlet |
| 1501 - 2000 | 3 | 3000 | 1500 | 4500 | 4 per outlet |
| | 4 | 2500 | 1000 | 4000 | 4 per outlet |
| | 5 | 2000 | 1000 | 3000 | 4 per outlet |
| **Apartment Buildings (Total storage requirements for the full site)** | | | | | |
| Up to 1000 | | 5000 | 3500 | 8500 | TBC |
| 1001 - 1500 | | 8000 | 4500 | 12500 | TBC |
| 1501 - 2000 | | 10000 | 6500 | 16500 | TBC |
| 2001 - 2500 | | 12000 | 8000 | 20000 | TBC |
| **Commercial sites (Total storage requirements for the full site)** | | | | | |
| Up to 1000 | | 5000 | 1500 | 6500 | TBC |
| 1001 - 1500 | | 8000 | 2000 | 10000 | TBC |
| 1501 - 2000 | | 10000 | 2500 | 12500 | TBC |
| 2001 - 2500 | | 12000 | 3000 | 15000 | TBC |

*Connection to underground Council infrastructure requires Council approval.

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SHEET NO. 1 JOB NO. 170510

DESIGN NN DATE 7/6/2017

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

Catchment analysis.

Site area 2213 m²

New proposed roof area

lower level roof

Aroof = 925 + 41 + 19 + 13.2 × 2

upper roof + 38 + 195

ground floor roof

= 1011 m² + 233 m² = 1244 m²

Proposed balcony area:

Abal = 1852 - 1244

= 608 m²

Landscape area:

Apar = 10 m² the site is mostly sealed

Paving area:

Apav = 2213 - 1852 - 10

= 351 m²

Estimated time of concentration tc = 7 mins.

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SHEET NO. 2 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

## Estimate the discharge flow to outlet point - Post development

Catchment analysis

| | | | | | |
|---|---|---|---|---|---|
| Total Catchment Area = | 2213 | $m^2$ | | | $C_{10}$ |
| 1st grade paving | 1852 | $m^2$ | equivalent | 83.7 % | 0.9 |
| 2nd grade paving | 351 | $m^2$ | equivalent | 15.9 % | 0.75 |
| Pervious area | 10 | $m^2$ | equivalent | 0.5 % | 0.1 |

| Cy = C10*Fy | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Design ARI | 1 | 2 | 5 | 10 | 20 | 40 | 50 | 60 | 80 | 100 | (years) |
| Fy | 0.8 | 0.85 | 0.95 | 1 | 1.05 | 1.13 | 1.15 | 1.17 | 1.19 | 1.2 | |

**Equivalent CA at ARI (years)**

| | 1 | 2 | 5 | 10 | 20 | 40 | 50 | 60 | 80 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| ($m^2$) CA = | 1545 | 1641 | 1834 | 1931 | 2028 | 2151 | 2156 | 2161 | 2166 | 2169 |
| (ha) CA = | 0.154 | 0.164 | 0.183 | 0.193 | 0.203 | 0.215 | 0.216 | 0.216 | 0.217 | 0.217 |
| Cequiv = | 0.70 | 0.74 | 0.83 | 0.87 | 0.92 | 0.97 | 0.97 | 0.98 | 0.98 | 0.98 |

**Estimate discharge rate for design area for 1, 5,10,20 and 100 years ARI storm event (L/s)**

| Storm Duration (min) | $I_1$ (mm/hr) | Outflow 1y ARI | $I_5$ (mm/hr) | Outflow 5y ARI | $I_{10}$ (mm/hr) | Outflow 10y ARI | $I_{20}$ (mm/hr) | Outflow 20y ARI | $I_{100}$ (mm/hr) | Outflow 100y ARI | Runoff Vo (m3) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 42.80 | 18.38 | 80.80 | 41.21 | 97.80 | 52.50 | 120.80 | 68.09 | 186.30 | 112.34 | 33.70 |
| 6 | 39.90 | 17.14 | 75.10 | 38.30 | 90.80 | 48.74 | 112.10 | 63.19 | 172.50 | 104.02 | 37.45 |
| 7 | 37.50 | 16.10 | 70.50 | 35.95 | 85.10 | 45.68 | 105.00 | 59.19 | 161.20 | 97.21 | 40.83 |
| 8 | 35.40 | 15.20 | 66.50 | 33.91 | 80.20 | 43.06 | 98.90 | 55.75 | 151.60 | 91.42 | 43.88 |
| 9 | 33.70 | 14.47 | 63.00 | 32.13 | 76.00 | 40.80 | 93.60 | 52.76 | 143.40 | 86.47 | 46.69 |
| 10 | 34.42 | 14.78 | 60.06 | 30.63 | 72.33 | 38.83 | 89.02 | 50.18 | 136.07 | 82.05 | 49.23 |
| 12 | 31.61 | 13.58 | 55.01 | 28.05 | 66.17 | 35.52 | 81.34 | 45.86 | 124.05 | 74.80 | 53.86 |
| 15 | 28.33 | 12.17 | 49.13 | 25.06 | 59.00 | 31.67 | 72.43 | 40.83 | 110.14 | 66.42 | 59.77 |
| 18 | 25.80 | 11.08 | 44.61 | 22.75 | 53.50 | 28.72 | 65.59 | 36.97 | 99.49 | 59.99 | 64.79 |
| 20 | 24.40 | 10.48 | 42.12 | 21.48 | 50.46 | 27.09 | 61.83 | 34.86 | 93.65 | 56.47 | 67.77 |
| 24 | 22.09 | 9.49 | 38.02 | 19.39 | 45.49 | 24.42 | 55.56 | 31.32 | 84.08 | 50.70 | 73.01 |
| 30 | 19.48 | 8.37 | 33.39 | 17.03 | 39.88 | 21.41 | 48.71 | 27.46 | 73.34 | 44.22 | 79.60 |
| 45 | 15.33 | 6.58 | 36.08 | 18.40 | 31.03 | 16.66 | 37.79 | 21.30 | 56.54 | 34.09 | 92.05 |
| 60 | 12.84 | 5.51 | 21.72 | 11.08 | 25.78 | 13.84 | 31.32 | 17.65 | 46.64 | 28.12 | 101.25 |
| 90 | 10.03 | 4.31 | 16.80 | 8.57 | 19.85 | 10.66 | 24.02 | 13.54 | 35.48 | 21.39 | 115.53 |
| 120 | 8.38 | 3.60 | 13.95 | 7.11 | 16.43 | 8.82 | 19.83 | 11.18 | 29.10 | 17.55 | 126.34 |
| 180 | 6.50 | 2.79 | 10.70 | 5.46 | 12.55 | 6.74 | 15.08 | 8.50 | 21.95 | 13.24 | 142.95 |
| 270 | 5.03 | 2.16 | 8.20 | 4.18 | 9.57 | 5.14 | 11.45 | 6.45 | 16.53 | 9.97 | 161.48 |
| 360 | 4.19 | 1.80 | 6.79 | 3.46 | 7.90 | 4.24 | 9.42 | 5.31 | 13.52 | 8.15 | 176.10 |
| 540 | 3.25 | 1.40 | 5.21 | 2.66 | 6.03 | 3.24 | 7.16 | 4.04 | 10.19 | 6.14 | 199.09 |
| 720 | 2.71 | 1.16 | 4.32 | 2.20 | 4.98 | 2.67 | 5.90 | 3.33 | 8.34 | 5.03 | 217.26 |
| 1080 | 2.02 | 0.87 | 3.21 | 1.64 | 3.69 | 1.98 | 4.37 | 2.46 | 6.17 | 3.72 | 241.09 |
| 1440 | 1.63 | 0.70 | 2.59 | 1.32 | 2.98 | 1.60 | 3.52 | 1.98 | 4.96 | 2.99 | 258.42 |
| 1800 | 1.38 | 0.59 | 2.18 | 1.11 | 2.51 | 1.35 | 2.97 | 1.67 | 4.18 | 2.52 | 272.22 |
| 2160 | 1.30 | 0.56 | 1.90 | 0.97 | 2.18 | 1.17 | 2.58 | 1.45 | 3.62 | 2.18 | 282.90 |
| 2880 | 0.95 | 0.41 | 1.51 | 0.77 | 1.73 | 0.93 | 2.04 | 1.15 | 2.87 | 1.73 | 299.05 |
| 4320 | 0.67 | 0.29 | 1.06 | 0.64 | 1.22 | 0.65 | 1.44 | 0.81 | 2.02 | 1.22 | 315.73 |

Predevelopment catchment analysis:

Site area 2213 m²

Roof area

$A_{roof} = 1650 + 86 + 2 = 1738\ m^2$

Ex. shops Ex house

Paving area:

$A_{pav} = 283 + 120 = 403\ m^2$

Garden & pervious area

$A_{per} = 2213 - 1738 - 403 = 72\ m^2$

$t_c = 7$ mins.

Refer next page for outflow estimation.

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SHEET NO. 4 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

## Estimate the TOTAL discharge flow to outlet points - Pre development

Catchment analysis

| | | | | | |
|---|---|---|---|---|---|
| Total Catchment Area = | 2213 | $m^2$ | | | C10 |
| 1st grade paving | 1738 | $m^2$ | equivalent | 78.5 % | 0.9 |
| 2nd grade paving | 403 | $m^2$ | equivalent | 18.2 % | 0.75 |
| Pervious area | 72 | $m^2$ | equivalent | 3.3 % | 0.1 |

Cy = C10*Fy

| Design ARI | 1 | 2 | 5 | 10 | 20 | 40 | 50 | 60 | 80 | 100 | (years) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fy | 0.8 | 0.85 | 0.95 | 1 | 1.05 | 1.13 | 1.15 | 1.17 | 1.19 | 1.2 | |

**Equivalent CA at ARI (years)**

| | 1 | 2 | 5 | 10 | 20 | 40 | 50 | 60 | 80 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| ($m^2$) CA = | 1499 | 1593 | 1780 | 1874 | 1967 | 2088 | 2094 | 2100 | 2106 | 2109 |
| (ha) CA = | 0.150 | 0.159 | 0.178 | 0.187 | 0.197 | 0.209 | 0.209 | 0.210 | 0.211 | 0.211 |
| Cequiv = | 0.68 | 0.72 | 0.80 | 0.85 | 0.89 | 0.94 | 0.95 | 0.95 | 0.95 | 0.95 |

**Estimate discharge rate for design area for 1, 5,10,20 and 100 years ARI storm event (L/s)**

| Storm Duration (min) | $I_1$ (mm/hr) | Outflow 1y ARI | $I_5$ (mm/hr) | Outflow 5y ARI | $I_{10}$ (mm/hr) | Outflow 10y ARI | $I_{20}$ (mm/hr) | Outflow 20y ARI | $I_{100}$ (mm/hr) | Outflow 100y ARI | Runoff Vo (m3) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 42.80 | 17.83 | 80.80 | 39.98 | 97.80 | 50.94 | 120.80 | 66.07 | 186.30 | 109.25 | 32.77 |
| 6 | 39.90 | 16.63 | 75.10 | 37.16 | 90.80 | 47.30 | 112.10 | 61.31 | 172.50 | 101.15 | 36.42 |
| 7 | 37.50 | 15.63 | 70.50 | 34.89 | 85.10 | 44.33 | 105.00 | 57.43 | 161.20 | 94.53 | 39.70 |
| 8 | 35.40 | 14.75 | 66.50 | 32.91 | 80.20 | 41.77 | 98.90 | 54.09 | 151.60 | 88.90 | 42.67 |
| 9 | 33.70 | 14.04 | 63.00 | 31.17 | 76.00 | 39.59 | 93.60 | 51.19 | 143.40 | 84.09 | 45.41 |
| 10 | 34.42 | 14.34 | 60.06 | 29.72 | 72.33 | 37.67 | 89.02 | 48.69 | 136.07 | 79.79 | 47.87 |
| 12 | 31.61 | 13.17 | 55.01 | 27.22 | 66.17 | 34.47 | 81.34 | 44.49 | 124.05 | 72.74 | 52.37 |
| 15 | 28.33 | 11.81 | 49.13 | 24.31 | 59.00 | 30.73 | 72.43 | 39.61 | 110.14 | 64.59 | 58.13 |
| 18 | 25.80 | 10.75 | 44.61 | 22.07 | 53.50 | 27.87 | 65.59 | 35.87 | 99.49 | 58.34 | 63.01 |
| 20 | 24.40 | 10.17 | 42.12 | 20.84 | 50.46 | 26.28 | 61.83 | 33.82 | 93.65 | 54.92 | 65.90 |
| 24 | 22.09 | 9.20 | 38.02 | 18.81 | 45.49 | 23.69 | 55.56 | 30.39 | 84.08 | 49.30 | 71.00 |
| 30 | 19.48 | 8.12 | 33.39 | 16.52 | 39.88 | 20.77 | 48.71 | 26.64 | 73.34 | 43.01 | 77.41 |
| 45 | 15.33 | 6.39 | 36.08 | 17.85 | 31.03 | 16.16 | 37.79 | 20.67 | 56.54 | 33.15 | 89.52 |
| 60 | 12.84 | 5.35 | 21.72 | 10.75 | 25.78 | 13.43 | 31.32 | 17.13 | 46.64 | 27.36 | 98.46 |
| 90 | 10.03 | 4.18 | 16.80 | 8.31 | 19.85 | 10.34 | 24.02 | 13.14 | 35.48 | 20.81 | 112.35 |
| 120 | 8.38 | 3.49 | 13.95 | 6.90 | 16.43 | 8.56 | 19.83 | 10.85 | 29.10 | 17.06 | 122.86 |
| 180 | 6.50 | 2.71 | 10.70 | 5.29 | 12.55 | 6.54 | 15.08 | 8.25 | 21.95 | 12.87 | 139.01 |
| 270 | 5.03 | 2.10 | 8.20 | 4.06 | 9.57 | 4.98 | 11.45 | 6.26 | 16.53 | 9.69 | 157.03 |
| 360 | 4.19 | 1.75 | 6.79 | 3.36 | 7.90 | 4.11 | 9.42 | 5.15 | 13.52 | 7.93 | 171.25 |
| 540 | 3.25 | 1.35 | 5.21 | 2.58 | 6.03 | 3.14 | 7.16 | 3.92 | 10.19 | 5.98 | 193.60 |
| 720 | 2.71 | 1.13 | 4.32 | 2.14 | 4.98 | 2.59 | 5.90 | 3.23 | 8.34 | 4.89 | 211.27 |
| 1080 | 2.02 | 0.84 | 3.21 | 1.59 | 3.69 | 1.92 | 4.37 | 2.39 | 6.17 | 3.62 | 234.45 |
| 1440 | 1.63 | 0.68 | 2.59 | 1.28 | 2.98 | 1.55 | 3.52 | 1.93 | 4.96 | 2.91 | 251.30 |
| 1800 | 1.38 | 0.58 | 2.18 | 1.08 | 2.51 | 1.31 | 2.97 | 1.62 | 4.18 | 2.45 | 264.72 |
| 2160 | 1.30 | 0.54 | 1.90 | 0.94 | 2.18 | 1.14 | 2.58 | 1.41 | 3.62 | 2.12 | 275.11 |
| 2880 | 0.95 | 0.40 | 1.51 | 0.75 | 1.73 | 0.90 | 2.04 | 1.12 | 2.87 | 1.68 | 290.82 |
| 4320 | 0.67 | 0.28 | 1.06 | 0.52 | 1.22 | 0.64 | 1.44 | 0.79 | 2.02 | 1.18 | 307.03 |

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SHEET NO. 5 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

Compare to predevelopment and post development there is minor difference between estimated flow.

Post development is slightly increased compare with pre development.

However, both situation are more than 80% impervious requirement for commercial property.

To match this requirement, detention tanks are required.

Based on Council table 3.1

Retention require for reused 12 m³

Detention require for full site 8 m³

total tank vol 20 m³.

Estimate 22 000 L tank is sufficient.
or combine 10000L + 12000L tank are sufficient
Check detention calculation.

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SHEET NO. 6 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

**Estimate the TOTAL discharge flow to outlet points if site have 80% impervious**

Catchment analysis

| | | | | | |
|---|---|---|---|---|---|
| Total Catchment Area = | 2213 | $m^2$ | | | $C_{10}$ |
| 1st grade paving | 1770.4 | $m^2$ | equivalent | 80.0 % | 0.9 |
| 2nd grade paving | 0 | $m^2$ | equivalent | 0.0 % | 0.75 |
| Pervious area | 442.6 | $m^2$ | equivalent | 20.0 % | 0.1 |

Cy = C10*Fy

| Design ARI | 1 | 2 | 5 | 10 | 20 | 40 | 50 | 60 | 80 | 100 | (years) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fy | 0.8 | 0.85 | 0.95 | 1 | 1.05 | 1.13 | 1.15 | 1.17 | 1.19 | 1.2 | |

**Equivalent CA at ARI (years)**

| | 1 | 2 | 5 | 10 | 20 | 40 | 50 | 60 | 80 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|
| ($m^2$) CA = | 1310 | 1392 | 1556 | 1638 | 1720 | 1820 | 1821 | 1822 | 1823 | 1824 |
| (ha) CA = | 0.131 | 0.139 | 0.156 | 0.164 | 0.172 | 0.182 | 0.182 | 0.182 | 0.182 | 0.182 |
| Cequiv = | 0.59 | 0.63 | 0.70 | 0.74 | 0.78 | 0.82 | 0.82 | 0.82 | 0.82 | 0.82 |

**Estimate discharge rate for design area for 1, 5,10,20 and 100 years ARI storm event (L/s)**

| Storm Duration (min) | $I_1$ (mm/hr) | Outflow 1y ARI | $I_5$ (mm/hr) | Outflow 5y ARI | $I_{10}$ (mm/hr) | Outflow 10y ARI | $I_{20}$ (mm/hr) | Outflow 20y ARI | $I_{100}$ (mm/hr) | Outflow 100y ARI | Runoff Vo (m3) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 42.80 | 15.59 | 80.80 | 34.95 | 97.80 | 44.52 | 120.80 | 57.74 | 186.30 | 94.44 | 28.33 |
| 6 | 39.90 | 14.53 | 75.10 | 32.48 | 90.80 | 41.34 | 112.10 | 53.59 | 172.50 | 87.46 | 31.48 |
| 7 | 37.50 | 13.66 | 70.50 | 30.49 | 85.10 | 38.74 | 105.00 | 50.19 | 161.20 | 81.72 | 34.32 |
| 8 | 35.40 | 12.89 | 66.50 | 28.76 | 80.20 | 36.51 | 98.90 | 47.28 | 151.60 | 76.85 | 36.89 |
| 9 | 33.70 | 12.27 | 63.00 | 27.25 | 76.00 | 34.60 | 93.60 | 44.74 | 143.40 | 72.69 | 39.26 |
| 10 | 34.42 | 12.54 | 60.06 | 25.98 | 72.33 | 32.93 | 89.02 | 42.55 | 136.07 | 68.98 | 41.39 |
| 12 | 31.61 | 11.51 | 55.01 | 23.79 | 66.17 | 30.12 | 81.34 | 38.88 | 124.05 | 62.89 | 45.28 |
| 15 | 28 33 | 10.32 | 49.13 | 21.25 | 59.00 | 26.86 | 72.43 | 34.62 | 110.14 | 55.83 | 50.25 |
| 18 | 25.80 | 9.40 | 44.61 | 19.29 | 53.50 | 24.36 | 65.59 | 31.36 | 99.49 | 50.44 | 54.47 |
| 20 | 24.40 | 8.89 | 42.12 | 18.22 | 50.46 | 22.97 | 61.83 | 29.56 | 93.65 | 47.47 | 56.97 |
| 24 | 22.09 | 8.05 | 38.02 | 16.44 | 45.49 | 20.71 | 55.56 | 26.56 | 84.08 | 42.62 | 61.38 |
| 30 | 19.48 | 7.09 | 33.39 | 14.44 | 39.88 | 18.16 | 48.71 | 23.28 | 73.34 | 37.18 | 66.92 |
| 45 | 15.33 | 5.58 | 26.08 | 15.60 | 31.03 | 14.13 | 37.79 | 18.06 | 56.54 | 28.66 | 77.39 |
| 60 | 12.84 | 4.68 | 21.72 | 9.39 | 25.78 | 11.74 | 31.32 | 14.97 | 46.64 | 23.64 | 85.12 |
| 90 | 10.03 | 3.65 | 16.80 | 7.27 | 19.85 | 9.04 | 24.02 | 11.48 | 35.48 | 17.99 | 97.12 |
| 120 | 8.38 | 3.05 | 13.95 | 6.03 | 16.43 | 7.48 | 19.83 | 9.48 | 29.10 | 14.75 | 106.21 |
| 180 | 6.50 | 2.37 | 10.70 | 4.63 | 12.55 | 5.71 | 15.08 | 7.21 | 21.95 | 11.13 | 120.17 |
| 270 | 5.03 | 1.83 | 8.20 | 3.55 | 9.57 | 4.36 | 11.45 | 5.47 | 16.53 | 8.38 | 135.75 |
| 360 | 4.19 | 1.53 | 6.79 | 2.94 | 7.90 | 3.60 | 9.42 | 4.50 | 13.52 | 6.85 | 148.04 |
| 540 | 3.25 | 1.18 | 5.21 | 2.25 | 6.03 | 2.75 | 7.16 | 3.42 | 10.19 | 5.17 | 167.37 |
| 720 | 2.71 | 0.99 | 4.32 | 1.87 | 4.98 | 2.27 | 5.90 | 2.82 | 8.34 | 4.23 | 182.64 |
| 1080 | 2.02 | 0.74 | 3.21 | 1.39 | 3.69 | 1.68 | 4.37 | 2.09 | 6.17 | 3.13 | 202.68 |
| 1440 | 1.63 | 0.59 | 2.59 | 1.12 | 2.98 | 1.36 | 3.52 | 1.68 | 4.96 | 2.51 | 217.24 |
| 1800 | 1.38 | 0.50 | 2.18 | 0.94 | 2.51 | 1.14 | 2.97 | 1.42 | 4.18 | 2.12 | 228.85 |
| 2160 | 1.30 | 0.47 | 1.90 | 0.82 | 2.18 | 0.99 | 2.58 | 1.23 | 3.62 | 1.84 | 237.83 |
| 2880 | 0.95 | 0.35 | 1.51 | 0.65 | 1.73 | 0.79 | 2.04 | 0.98 | 2.87 | 1.45 | 251.41 |
| 4320 | 0.67 | 0.24 | 1.06 | 0.46 | 1.22 | 0.56 | 1.44 | 0.69 | 2.02 | 1.02 | 265.42 |

Assump max discharge rate at one point from Council requirement is 8 L/s

for 1 in 10 years ARI.

Require outlets are 5 outlets.

- For paving & landscape area only to Hard Avenue.

  Estimated flow out rate is 7.2 L/s, 1-1 is sufficient for one outlet

- Roof only area to detention tank.

  discharge rate at tc 7 min allowable:

  $Q_{allow} = 38.7 - 6.25 = 32.45$ L/s

  Adopt 4 outlet with each outlet max discharge rate ≈ 8 L/s

  For major storm event 1 in 100 years ARI

  $Q_{allow\ 100} = 81.72 - 14.2 = 67.5$ L/s

  Equivalent each outlet allowable discharge rate is 16.8 L/s

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SHEET NO. 8 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

**Estimate the discharge flow to outlet points - Post development at surface flow only.**

Catchment analysis

| | | | | | |
|---|---|---|---|---|---|
| Total Catchment Area = | 361 | $m^2$ | Paving and Landscape only | | C10 |
| 1st grade paving | 0 | $m^2$ | equivalent | 0.0 % | 0.9 |
| 2nd grade paving | 351 | $m^2$ | equivalent | 97.2 % | 0.75 |
| Pervious area | 10 | $m^2$ | equivalent | 2.8 % | 0.1 |

| Cy = C10*Fy | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Design ARI | 1 | 2 | 5 | 10 | 20 | 40 | 50 | 60 | 80 | 100 | (years) |
| Fy | 0.8 | 0.85 | 0.95 | 1 | 1.05 | 1.13 | 1.15 | 1.17 | 1.19 | 1.2 | |
| **Equivalent CA at ARI (years)** | | | | | | | | | | | |
| | 1 | 2 | 5 | 10 | 20 | 40 | 50 | 60 | 80 | 100 | |
| ($m^2$) CA = | 211 | 225 | 251 | 264 | 277 | 299 | 304 | 309 | 314 | 317 | |
| (ha) CA = | 0.021 | 0.022 | 0.025 | 0.026 | 0.028 | 0.030 | 0.030 | 0.031 | 0.031 | 0.032 | |
| Cequiv = | 0.59 | 0.62 | 0.70 | 0.73 | 0.77 | 0.83 | 0.84 | 0.86 | 0.87 | 0.88 | |

**Estimate discharge rate for design area for 1, 5,10,20 and 100 years ARI storm event (L/s)**

| Storm Duration (min) | $I_1$ (mm/hr) | Outflow 1y ARI | $I_5$ (mm/hr) | Outflow 5y ARI | $I_{10}$ (mm/hr) | Outflow 10y ARI | $I_{20}$ (mm/hr) | Outflow 20y ARI | $I_{100}$ (mm/hr) | Outflow 100y ARI | Runoff Vo (m3) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 42.80 | 2.52 | 80.80 | 5.64 | 97.80 | 7.18 | 120.80 | 9.32 | 186.30 | 16.42 | 4.93 |
| 6 | 39.90 | 2.34 | 75.10 | 5.24 | 90.80 | 6.67 | 112.10 | 8.65 | 172.50 | 15.21 | 5.47 |
| 7 | 37.50 | 2.20 | 70.50 | 4.92 | 85.10 | 6.25 | 105.00 | 8.10 | 161.20 | 14.21 | 5.97 |
| 8 | 35.40 | 2.08 | 66.50 | 4.64 | 80.20 | 5.89 | 98.90 | 7.63 | 151.60 | 13.36 | 6.41 |
| 9 | 33.70 | 1.98 | 63.00 | 4.40 | 76.00 | 5.58 | 93.60 | 7.22 | 143.40 | 12.64 | 6.83 |
| 10 | 34.42 | 2.02 | 60.06 | 4.19 | 72.33 | 5.31 | 89.02 | 6.87 | 136.07 | 12.00 | 7.20 |
| 12 | 31.61 | 1.86 | 55.01 | 3.84 | 66.17 | 4.86 | 81.34 | 6.27 | 124.05 | 10.94 | 7.87 |
| 15 | 28.33 | 1.66 | 49.13 | 3.43 | 59.00 | 4.33 | 72.43 | 5.59 | 110.14 | 9.71 | 8.74 |
| 18 | 25.80 | 1.52 | 44.61 | 3.11 | 53.50 | 3.93 | 65.59 | 5.06 | 99.49 | 8.77 | 9.47 |
| 20 | 24.40 | 1.43 | 42.12 | 2.94 | 50.46 | 3.71 | 61.83 | 4.77 | 93.65 | 8.26 | 9.91 |
| 24 | 22.09 | 1.30 | 38.02 | 2.65 | 45.49 | 3.34 | 55.56 | 4.29 | 84.08 | 7.41 | 10.67 |
| 30 | 19.48 | 1.14 | 33.39 | 2.33 | 39.88 | 2.93 | 48.71 | 3.76 | 73.34 | 6.47 | 11.64 |
| 45 | 15.33 | 0.90 | 36.08 | 2.52 | 31.03 | 2.28 | 37.79 | 2.91 | 56.54 | 4.98 | 13.46 |
| 60 | 12.84 | 0.75 | 21.72 | 1.52 | 25.78 | 1.89 | 31.32 | 2.42 | 46.64 | 4.11 | 14.80 |
| 90 | 10.03 | 0.59 | 16.80 | 1.17 | 19.85 | 1.46 | 24.02 | 1.85 | 35.48 | 3.13 | 16.89 |
| 120 | 8.38 | 0.49 | 13.95 | 0.97 | 16.43 | 1.21 | 19.83 | 1.53 | 29.10 | 2.57 | 18.47 |
| 180 | 6.50 | 0.38 | 10.70 | 0.75 | 12.55 | 0.92 | 15.08 | 1.16 | 21.95 | 1.93 | 20.90 |
| 270 | 5.03 | 0.30 | 8.20 | 0.57 | 9.57 | 0.70 | 11.45 | 0.88 | 16.53 | 1.46 | 23.61 |
| 360 | 4.19 | 0.25 | 6.79 | 0.47 | 7.90 | 0.58 | 9.42 | 0.73 | 13.52 | 1.19 | 25.74 |
| 540 | 3.25 | 0.19 | 5.21 | 0.36 | 6.03 | 0.44 | 7.16 | 0.55 | 10.19 | 0.90 | 29.10 |
| 720 | 2.71 | 0.16 | 4.32 | 0.30 | 4.98 | 0.37 | 5.90 | 0.46 | 8.34 | 0.74 | 31.76 |
| 1080 | 2.02 | 0.12 | 3.21 | 0.22 | 3.69 | 0.27 | 4.37 | 0.34 | 6.17 | 0.54 | 35.25 |
| 1440 | 1.63 | 0.10 | 2.59 | 0.18 | 2.98 | 0.22 | 3.52 | 0.27 | 4.96 | 0.44 | 37.78 |
| 1800 | 1.38 | 0.08 | 2.18 | 0.15 | 2.51 | 0.18 | 2.97 | 0.23 | 4.18 | 0.37 | 39.80 |
| 2160 | 1.30 | 0.08 | 1.90 | 0.13 | 2.18 | 0.16 | 2.58 | 0.20 | 3.62 | 0.32 | 41.36 |
| 2880 | 0.95 | 0.06 | 1.51 | 0.11 | 1.73 | 0.13 | 2.04 | 0.16 | 2.87 | 0.25 | 43.72 |
| 4320 | 0.67 | 0.04 | 1.06 | 0.07 | 1.22 | 0.09 | 1.44 | 0.11 | 2.02 | 0.18 | 46.16 |

STRUCTURAL SYSTEMS
consulting engineers

SHEET NO. 9 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

Initial calculation (83mm x 2.24m tl) inlet total 2.45lt

Detention try 14000L with 12000 portion for detention

with 4 outlets $\phi$72mm orifice to

street ent. at 320mm height invert

Tank overflow to Parking and common driveway area

Maximum detention height: 2240 − 320 = 1920mm

Adopt 1850mm max H/L for detention design.

Increase blockage, tank overflow to surface system and discharge to Hart Avenue without flood the building.

## Post- Development 1 in 10 years ARI storm :

Total Catchment Area = 1852 $m^2$

-Total Roof Area = 1852 $m^2$
-Paved Area = 0 $m^2$
-Garden Area = 0 $m^2$

1) Discharge from major area of roof ==> Detention Tank
Roof Area = 1852 $m^2$

2) Discharge from Ground ==> Street Water Table

| | $C_{10}$ |
|---|---|
| Roof Area | 0.9 |
| Paved Area | 0.75 |
| Garden Area | 0.1 |

Qallowable for detention tank discharge = 32.45 L/s

Total depth to orifice pipe = 0.53 m

Orifice Required

$$A = \frac{8.11 \times 10^{-3}}{0.61 \left( 2 \times 9.81 \times 0.53 \right)^{1/2}} = 41.24 \times 10^{-4} \text{ m2}$$

**Diameter** = 72.5 mm

STRUCTURAL SYSTEMS
consulting engineers

SHEET NO. 11 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

**Adopt 72 mm Orifice**

For 72mmΦ orifice, Area = 40.72 x $10^{-4}$ $mm^2$

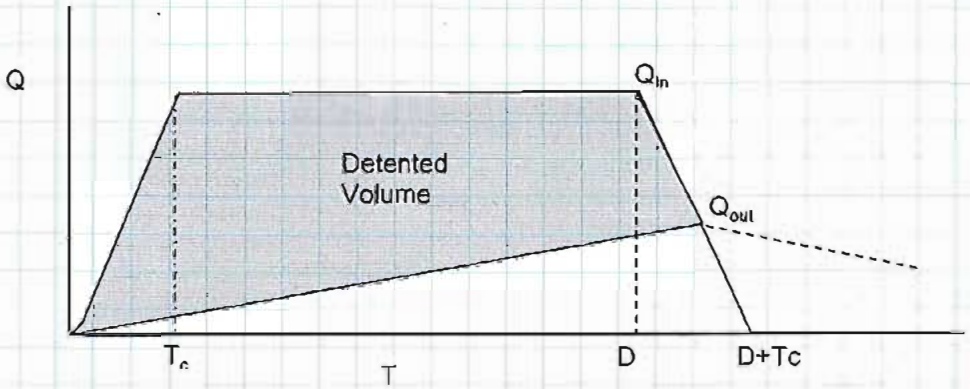
Discharge from detention area,

Q = 40.72 x (2x9.81x0.53)^1/2 x $10^{-4}$ x 0.61 x$10^3$ = 8.01 L/s

Try 4 outlets

Total estimated discharge rate = 32.0 L/s

Adopt total discharge rate from detention tank = **32.5** L/s




Assumed time of concentration, $T_c$ = 7 minutes

| Storm | $I_{10}$ (mm/hr) | Maximum Roof Discharge, $Q_{in}$ | Max Detention Discharge, $Q_{out}$ (L/s) | Inlet Volume (L) | Outlet Volume (L) | Detented Volume |
|---|---|---|---|---|---|---|
| 7 | 85.1 | 39.43 | 32.50 | 16562 | 13650 | 2912 |
| 10 | 72.33 | 33.52 | 32.50 | 20109 | 16575 | 3534 |
| 20 | 50.46 | 23.38 | 32.50 | 28058 | 26325 | 1733 |
| 30 | 39.88 | 18.48 | 32.50 | 33263 | 36075 | -2812 |
| 45 | 31.03 | 14.38 | 32.50 | 38822 | 50700 | -11878 |
| 60 | 25.78 | 11.95 | 32.50 | 43004 | 65325 | -22321 |
| 120 | 16.43 | 7.61 | 32.50 | 54815 | 123825 | -69010 |
| 180 | 12.55 | 5.82 | 32.50 | 62805 | 182325 | -119520 |
| 270 | 9.57 | 4.43 | 32.50 | 71838 | 270075 | -198237 |

**Provide a detention area have minimum 3535 L volumn to capture stormwater with outlet 72mm diameter orifice diverted to street water table.**
**As big capacity storm water tank 12000L. It is always have sufficient additional capacity for detention.**
**Therefore, in reality actual discharge rate to Council streetwater table is much less**
**For storm event greater than 1 in 10 year ARI, water building up in the tank.**

**Adopt detention tank, V** = 14000 L ( 2.24m H x 3.0 m diameter)
Reserve 2000L for retention

STRUCTURAL SYSTEMS
consulting engineers

SHEET NO. 12 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

## Post- Development 1 in 100 years ARI storm roof only :

Total Catchment Area = 1852 $m^2$

-Total Roof Area = 1852 $m^2$
-Paved Area = 0 $m^2$
-Garden Area = 0 $m^2$

1) Discharge from 100% of roof ==> Detention Tank
Roof Area = 1852 $m^2$

2) Discharge from Ground ==> Street Water Table

| | $C_{100}$ |
|---|---|
| Roof Area | 1 |
| Paved Area | 0.9 |
| Garden Area | 0.36 |

Qallowable for detention tank discharge = 67.5 L/s

Total depth to orifice pipe = 1.85 m

Orifice Required

$$A = \frac{16.88 \times 10^{-3}}{0.61 \left( 2 \times 9.81 \times 1.85 \right)^{1/2}} = 45.92 \times 10^{-4} \text{ m2}$$

**Diameter = 76.5 mm**

STRUCTURAL SYSTEMS
consulting engineers

SHEET NO. 13 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

**Adopt 72 mm Orifice**

For 72mmΦ orifice, Area = 40.72 x $10^{-4}$ $mm^2$

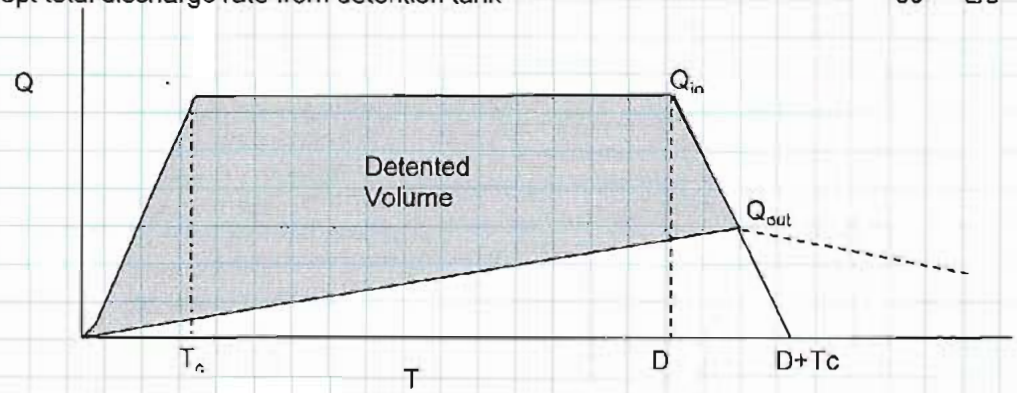
Discharge from detention tank at each outlet

Q = 40.72 x (2x9.81x1.85)^1/2 x $10^{-4}$ x 0.61 x$10^{3}$ = 14.96 L/s

Try 4 outlets

Total estimated discharge rate = 59.9 L/s

Adopt total discharge rate from detention tank = 60 L/s




Assumed time of concentration, $T_c$ = 7 minutes

| Storm Duration | $I_{100}$ (mm/hr) | Maximum Roof Discharge, $Q_{in}$ (L/s) | Max Detention Discharge, $Q_{out}$ (L/s) | Inlet Volume (L) | Outlet Volume (L) | Detented Volume (L) |
|---|---|---|---|---|---|---|
| 7 | 161.2 | 82.99 | 60.00 | 34858 | 25200 | 9658 |
| 10 | 136.07 | 70.06 | 60.00 | 42034 | 30600 | 11434 |
| 20 | 93.65 | 48.22 | 60.00 | 57860 | 48600 | 9260 |
| 30 | 73.34 | 37.76 | 60.00 | 67967 | 66600 | 1367 |
| 45 | 56.54 | 29.11 | 60.00 | 78597 | 93600 | -15003 |
| 60 | 46.64 | 24.01 | 60.00 | 86446 | 120600 | -34154 |
| 120 | 29.1 | 14.98 | 60.00 | 107873 | 228600 | -120727 |
| 180 | 21.95 | 11.30 | 60.00 | 122052 | 336600 | -214548 |
| 270 | 16.53 | 8.51 | 60.00 | 137871 | 498600 | -360729 |

**Provide a detention area have minimum 11434 L volumn to capture stormwater with outlet 72mm diameter orifice diverted to street water table.**

**For storm event greater than 1 In 100 year ARI, overflow water to be diverted to the street water table.**

**Adopt detention tank, V** = 14000 L ( 2.24m H x 3.0 m diameter)
Reserve 2000L for retention

**Total available detention volume** = 12000 L **> Required detention volume** OK

Round Tanks

Categories

- Round Tanks
- Maxicube Slimline tanks
- Slimline Tanks
- Pumps
- Accessories
- Waste Management

Products

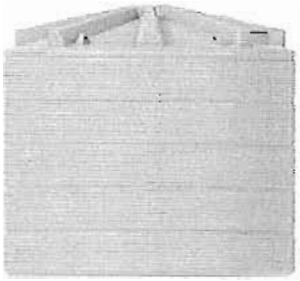
- Water Filtration
- Garden Beds
- Health & Leisure

Products

- Pellets

Rural tanks

Suburban range



# 10,000L ROUND

Availability: In stock

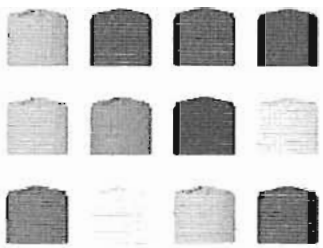
***ON SALE NOW* Call or email for a 'HOT' price today - (08) 8244 2544 or sales@maxiplas.com**

Share

## Details

Designed primarily for rural applications, this very high-capacity, robust tank comes in a range of colours to suit your exterior decor. Tank height: 2400mm, diameter: 2580mm, inlet height: 2150mm. These tanks are designed for above-ground installations on a solid, flat base (concrete or boxed and sanded). Capacities and dimensions are approximate due to variable shrinkage during the manufacturing process. Tanks are supplied with a leaf strainer, 90mm overflow outlet, and brass outlet with ball valve.

## More Views



*Colour

Choose an Option...

* Required Fields

***ON SALE NOW* Call or email for a 'HOT' price today - (08) 8244 2544 or sales@maxiplas.com**

Qty: 0 Add to Cart

## Additional Information

| | |
|---|---|
| Capacity | 10,000L |
| Height | 2350mm |
| Length | N/A |
| Width/Diameter | 2550mm diameter |
| Inlet Height | 2150mm |

Round Tanks

Categories

- Round Tanks
- Maxicube Slimline tanks
- Slimline Tanks
- Pumps
- Accessories
- Waste Management

Products

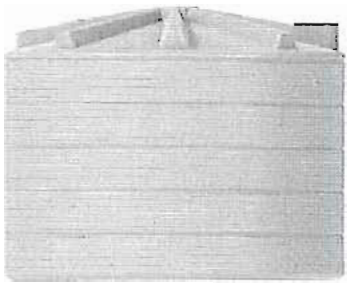
- Water Filtration
- Garden Beds
- Health & Leisure

Products

- Pallets

Suburban range

Rural tanks



# 14,000L ROUND

Availability: In stock

***ON SALE NOW* Call or email for a 'HOT' price today - (08) 8244 2544 or sales@maxiplas.com**

Share

## Details

Designed primarily for rural applications, this very high-capacity, robust tank comes in a range of colours to suit your exterior decor. Tank height: 2450mm, diameter: 3000mm, inlet height: 2240mm. These tanks are designed for above-ground installations on a solid, flat base (concrete or boxed and sanded). Capacities and dimensions are approximate due to variable shrinkage during the manufacturing process. Tanks are supplied with a leaf strainer, 90mm overflow outlet, and brass outlet with ball valve.

## More Views

*Colour

Choose an Option...

* Required Fields

***ON SALE NOW* Call or email for a 'HOT' price today - (08) 8244 2544 or sales@maxiplas.com**

Qty: 0 Add to Cart

## Additional Information

| | |
|---|---|
| **Capacity** | 14,000L |
| **Height** | 2450mm |
| **Length** | N/A |
| **Width/Diameter** | 3000mm diameter |
| **Inlet Height** | 2250mm |



| Date | Job Number | Site | Engineer | Page No: |
|---|---|---|---|---|
| 28.06.17 | DT 170510 | 244-246 UNLEY ROAD, HYDE PARK | NN | 15 |

STRUCTURAL SYSTEMS
consulting engineers

SHEET NO. 16 JOB NO. DT 170510

DESIGN NN DATE 28.6.17

PROJECT **244-246 UNLEY ROAD, HYDE PARK**

**Surcharge outlet.** *Base on AS3500.3-2003*

Design flow rate through outlet
Qout = 83 L/s
Minimum require grated area
A = Qout/150 = 0.55 m²
Clear percentage of the grate 70 %
Gross area of the grated pit
A pit = 0.79 m²
Minimum require square grated pit size
L = 0.89 m
Adopt pit size 0.90 m rectangular pit
0.90 m
With area of grated 0.57 m²

Exist velocity from the grate
Vout = 0.15 m/s velocity <0.15m/s, OK

Note: Pit must be not less than 300mm below FFL and
75mm above unpaved surface or level with paved surface.
Wholly within the property, clear of any building.
Discharge noticeable and must have overland flow path.

Alternatively provide SEP 2/900 length.

Surcharge outflow similar as weir flow condition

$Q_i = 1.66 \times P \times d^{1.5}$

$P = 1.8\,m$

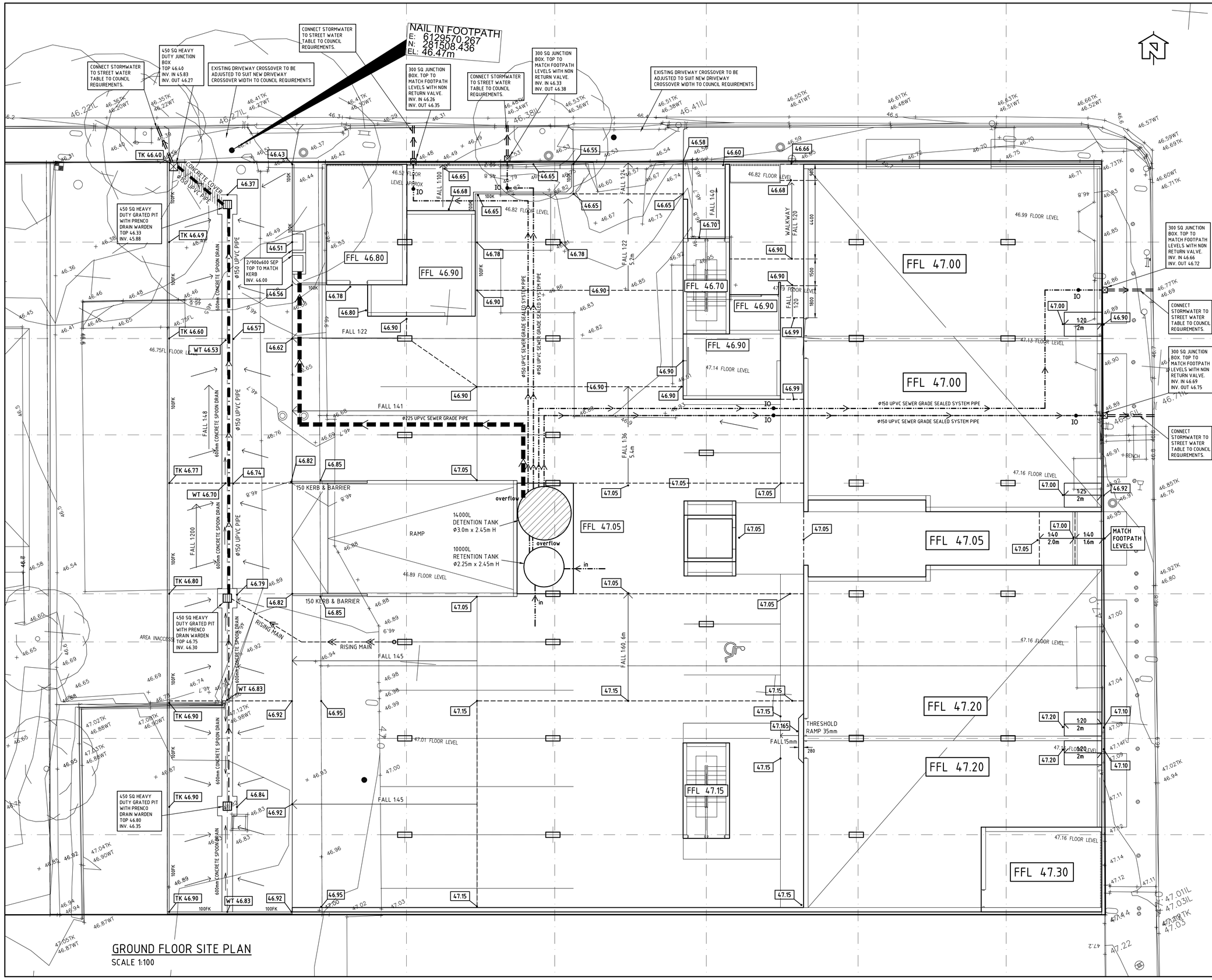
by $d = 95\,mm$ depth

$Q_i = 1.66 \times 1.8 \times (0.095)^{1.5} = 0.087\,m^3/s$

$= 87\,L/s > Q_{max}$ required

PASS.

Adopt 2/900 x 600 SEP for surcharge outflow in case pipes is totally blocked.




GROUND FLOOR SITE PLAN
SCALE 1:100

## NOTES:

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3. USE FLEXIBLE CONNECTION FOR STORMWATER PIPES.
4. THIS IS NOT A CADASTRAL PLAN AND SHOULD NOT BE USED IN DETERMINING PRECISE DIMENSIONS WITH RESPECT TO BOUNDARIES.
5. ALL U.P.V.C. PIPES LESS THAN 450mm BELOW THE SURFACE ON THE DRIVEWAY TO BE ENCASED IN 100mm CONCRETE.
6. PIPES LESS THAN 300mm IN DEPTH (FROM TOP OF PIPE) MUST HAVE CONCRETE COVER.
7. BUILDERS/ CONTRACTORS TO CHECK FOR ANY UNDERGROUND SERVICES PRIOR TO CONSTRUCTION.
8. STORMWATER TANK TO BE PLUMBED TO LAUNDRY \ WC - REFER TO ARCHITECTURAL DRAWINGS, OWNER, BUILDER, DEVELOPER FOR DETAILS.
9. IT IS THE RESPONSIBILITY OF THE OWNER/BUILDER TO ENSURE THAT FINISHED LEVELS AS PROPOSED BY ENGINEER BE ADEQUATE AS TO GET DESIRED FALL TO SEWERAGE INVERT. OWNER/BUILDER/PLUMBING CONSULTANT/PLUMBER MUST CHECK EXISTING SEWERAGE CONNECTION POINT INVERT TO ENSURE THAT PROPOSED FINISHED LEVELS ARE ADEQUATE PRIOR TO COMMENCEMENT OF ANY WORK.

## LEGEND:

- ϕ100 UPVC PIPE STORMWATER ALIGNMENT
- ϕ150 UPVC PIPE STORMWATER ALIGNMENT
- UNDER GROUND SEALED SYSTEM ϕ100 UPVC PIPE
- HEAVY DUTY 200mm WIDE GRATED STRIP DRAIN
- CONCRETE SPOON DRAIN FALL 1 in 200 MIN
- 100.35 DESIGN CONTOUR
- DP DOWNPIPE
- 100.35 DESIGN LEVEL
- SEWER I.P.
- 99.90 EXISTING LEVEL
- JUNCTION BOX
- IO INSPECTION OPENING
- GRATED SUMP
- NOTE: PROVIDE PERIMETER CONCRETE KERBING AS REQUIRED.
- GRATED SUMP WITH DOWN PIPE TO LOWER LEVEL

14000L DETENTION TANK ϕ3.0m x 2.45m HIGH OR SIMILAR EQUIVALENT 2000L FOR REUSE & 12000L FOR DETENTION. PROVIDE 4 OUTLETS WITH ϕ72mm ORIFICE OVERFLOW TO UNDERGROUND STORMWATER SYSTEM.

UNDERGROUND WATER TANK


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PROJECT
7-STOREY with UNDERCROFT RESIDENTIAL DEVELOPMENT

ADDRESS
244-246 UNLEY ROAD, HYDE PARK

DRAWING TITLE
GROUND FLOOR SITE PLAN

CLIENT
COMMERCIAL & GENERAL


STRUCTURAL SYSTEMS consulting engineers
108 Wright Street, Adelaide SA 5000 Tel: (08) 8231 6000
Fax: (08) 8231 3444 Email: civil@structuralsystemssa.com.au ABN 21 366 115 939


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| | | PLOT SCALE | 1:100 |

| JOB No. | DRAWING No. | STAGE | ISSUE |
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| DT 170510 | SW01 | PA | 0 |

STAGE ABBREVIATION: P=PRELIMINARY, DS=ENGINEERING DESIGN STAGE, PA=FOR PLANNING APPROVAL, T=TENDER, BA=BUILDING APPROVAL, C=FOR CONSTRUCTION

NAIL IN FOOTPATH
E: 6129570.267
N: 281508.436
EL: 46.47m

FFL 43.80

FFL 42.20

RAMP UP

RISING MAIN

HEAVY DUTY 200mm WIDE GRATED STRIP DRAIN

450 CONCRETE SPOON DRAIN FALL 1:200 MIN

200 Sq GRATED SUMP TOP 43.70

200 Sq GRATED SUMP TOP 42.10

PIPE CONNECTED TO UNDERGROUND TANK BELOW

AREA INACCESSIBLE

46.52 FLOOR LEVEL APPROX

46.75FL FLOOR LEVEL

46.82 FLOOR LEVEL

46.89 FLOOR LEVEL

47.01 FLOOR LEVEL

47.9 FLOOR LEVEL

47.14 FLOOR LEVEL

47.13 FLOOR LEVEL

47.16 FLOOR LEVEL

46.99 FLOOR LEVEL

+BENCH

DN

## BASEMENT SITE PLAN
SCALE 1:100

## NOTES:

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5. ALL U.P.V.C. PIPES LESS THAN 450mm BELOW THE SURFACE ON THE DRIVEWAY TO BE ENCASED IN 100mm CONCRETE.
6. PIPES LESS THAN 300mm IN DEPTH (FROM TOP OF PIPE) MUST HAVE CONCRETE COVER.
7. BUILDERS/ CONTRACTORS TO CHECK FOR ANY UNDERGROUND SERVICES PRIOR TO CONSTRUCTION.
8. STORMWATER TANK TO BE PLUMBED TO LAUNDRY & WC - REFER TO ARCHITECTURAL DRAWINGS, OWNER, BUILDER, DEVELOPER FOR DETAILS.
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## LEGEND:

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- ϕ150 UPVC PIPE STORMWATER ALIGNMENT
- UNDER GROUND SEALED SYSTEM ϕ100 UPVC PIPE
- HEAVY DUTY 200mm WIDE GRATED STRIP DRAIN
- CONCRETE SPOON DRAIN FALL 1 in 200 MIN
- 100.35 DESIGN CONTOUR
- DP DOWNPIPE
- 100.35 DESIGN LEVEL
- SEWER I.P.
- 99.99 EXISTING LEVEL
- JUNCTION BOX
- IO INSPECTION OPENING
- GRATED SUMP
- NOTE: PROVIDE PERIMETER CONCRETE KERBING AS REQUIRED
- GRATED SUMP WITH DOWN PIPE TO LOWER LEVEL


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PROJECT
7-STOREY with UNDERCROFT RESIDENTIAL DEVELOPMENT

ADDRESS
244-246 UNLEY ROAD, HYDE PARK

DRAWING TITLE
BASEMENT SITE PLAN

CLIENT
COMMERCIAL & GENERAL


STRUCTURAL SYSTEMS consulting engineers
108 Wright Street, Adelaide SA 5000 Tel: (08) 8231 6000
Fax: (08) 8231 3444 Email: civil@structuralsystemsa.com.au ABN 21 366 115 939


| | | | |
|---|---|---|---|
| DRAWN | HN | DESIGNED | NN |
| CHECKED | | DATE REVISED | -- |
| SCALE 1:100 UNO | PAPER SIZE A1 | DATE ISSUED | 07/07/17 |
| ALL DIMENSIONS IN mm – DO NOT SCALE | | PLOT SCALE | 1:100 |

| JOB No. | DRAWING No. | STAGE | ISSUE |
|---|---|---|---|
| DT 170510 | SW02 | PA | 0 |

STAGE ABBREVIATION: P-PRELIMINARY; DS-ENGINEERING DESIGN STAGE; PA-FOR PLANNING APPROVAL; T-TENDER; BA-BUILDING APPROVAL; C-FOR CONSTRUCTION

NAIL IN FOOTPATH
E: 6129570.267
N: 281508.436
EL: 46.47m

FFL 40.60

RISING MAIN

SUMP & PUMP TO GROUND FLOOR

AREA INACCESSIBLE

RAMP UP

150 UPVC PIPE

BENCH

200 Sq GRATED SUMP TOP 40.50

450 CONCRETE SPOON DRAIN FALL 1:200 MIN

46.52 FLOOR LEVEL APPROX

46.82 FLOOR LEVEL

46.99 FLOOR LEVEL

47.13 FLOOR LEVEL

47.14 FLOOR LEVEL

47.16 FLOOR LEVEL

47.01 FLOOR LEVEL

46.89 FLOOR LEVEL

46.75FL FLOOR LEVEL

## LOWER BASEMENT SITE PLAN
SCALE 1:100

## NOTES:

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2. ALL WORK EXTERNAL TO SITE BOUNDARY TO BE CARRIED OUT TO COUNCIL REQUIREMENTS.
3. USE FLEXIBLE CONNECTION FOR STORMWATER PIPES.
4. THIS IS NOT A CADASTRAL PLAN AND SHOULD NOT BE USED IN DETERMINING PRECISE DIMENSIONS WITH RESPECT TO BOUNDARIES.
5. ALL U.P.V.C. PIPES LESS THAN 450mm BELOW THE SURFACE ON THE DRIVEWAY TO BE ENCASED IN 100mm CONCRETE.
6. PIPES LESS THAN 300mm IN DEPTH (FROM TOP OF PIPE) MUST HAVE CONCRETE COVER.
7. BUILDERS/ CONTRACTORS TO CHECK FOR ANY UNDERGROUND SERVICES PRIOR TO CONSTRUCTION.
8. STORMWATER TANK TO BE PLUMBED TO LAUNDRY \ WC - REFER TO ARCHITECTURAL DRAWINGS, OWNER, BUILDER, DEVELOPER FOR DETAILS.
9. IT IS THE RESPONSIBILITY OF THE OWNER/BUILDER TO ENSURE THAT FINISHED LEVELS AS PROPOSED BY ENGINEER BE ADEQUATE AS TO GET DESIRED FALL TO SEWERAGE INVERT. OWNER/BUILDER/PLUMBING CONSULTANT/PLUMBER MUST CHECK EXISTING SEWERAGE CONNECTION POINT INVERT TO ENSURE THAT PROPOSED FINISHED LEVELS ARE ADEQUATE PRIOR TO COMMENCEMENT OF ANY WORK.

## LEGEND:

- ø100 UPVC PIPE STORMWATER ALIGNMENT
- ø150 UPVC PIPE STORMWATER ALIGNMENT
- UNDER GROUND SEALED SYSTEM ø100 UPVC PIPE
- HEAVY DUTY 200mm WIDE GRATED STRIP DRAIN
- CONCRETE SPOON DRAIN FALL 1 in 200 MIN
- 100.35 DESIGN CONTOUR
- DP DOWNPIPE
- 100.35 DESIGN LEVEL
- SEWER I.P.
- 99.10 EXISTING LEVEL
- JUNCTION BOX
- IO INSPECTION OPENING
- GRATED SUMP
- NOTE: PROVIDE PERIMETER CONCRETE KERBING AS REQUIRED.
- GRATED SUMP WITH DOWN PIPE TO LOWER LEVEL

DENOTE UNDERGROUND CONCRETE TANK WITH TWIN PUMPS & ALARM DISCHARGE GROUND WATER TO SEWER TO COUNCIL AND SA WATER APPROVAL & DETAIL


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PROJECT
7-STOREY with UNDERCROFT RESIDENTIAL DEVELOPMENT

ADDRESS
244-246 UNLEY ROAD, HYDE PARK

DRAWING TITLE
LOWER BASEMENT SITE PLAN

CLIENT
COMMERCIAL & GENERAL


STRUCTURAL SYSTEMS
consulting engineers

108 Wright Street, Adelaide SA 5000 Tel: (08) 8231 6000
Fax: (08) 8231 3444 Email: civil@structuralsystemssa.com.au ABN 21 366 115 939


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# Unley Road Residential Development
# Minister's Specification SA 78B
## Acoustic Design Advice

Report Date: Friday, 30 June 2017
Reference: A17471RP1, Revision 0

Resonate acoustics

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**Document Information**

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| **Report title** | Acoustic Design Advice | |
| **Project Number** | A17471 | |
| **Author** | Deb James<br>Associate Director<br>p+61 8 8155 5888<br>m+61 422 047 275<br>deb.james@resonateacoustics.com | |
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| 0 | 30 June 2017 | First Issue |
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# Glossary

| | |
|---|---|
| A-weighting | A spectrum adaption that is applied to measured noise levels to represent human hearing. A-weighted levels are used as human hearing does not respond equally at all frequencies. |
| Characteristic | Associated with a noise source, means a tonal, impulsive, low frequency or modulating characteristic of the noise that is determined in accordance with the Guidelines for the use of the Environment Protection (Noise) Policy (Noise EPP) to be fundamental to the nature and impact of the noise. |
| Continuous noise level | A-weighted noise level of a continuous steady sound that, for the period over which the measurement is taken using fast time weighting, has the same mean square sound pressure as the noise level which varies over time when measured in relation to a noise source and noise-affected premises in accordance with the Noise EPP |
| Day | Between 7 am and 10 pm as defined in the Noise EPP |
| dB | Decibel—a unit of measurement used to express sound level. It is based on a logarithmic scale which means a sound that is 3 dB higher has twice as much energy. We typically perceive a 10 dB increase in sound as a doubling of that sound level. |
| dB(A) | Units of the A-weighted sound level. |
| Facade sound reduction | means the reduction in external to internal sound level provided by the *building envelope*. |
| Floor area | means, in relation to a room, the area of the room measured within the finished surfaces of the walls, and includes the area occupied by any cupboard or other built-in furniture, fixture or fitting. |
| Frequency (Hz) | The number of times a vibrating object oscillates (moves back and forth) in one second. Fast movements produce high frequency sound (high pitch/tone), but slow movements mean the frequency (pitch/tone) is low. 1 Hz is equal to 1 cycle per second. |
| Indicative noise level | Indicative noise level determined under clause 5 of the Noise EPP. |
| $L_{90}$ | Noise level exceeded for 90 % of the measurement time. The $L_{90}$ level is commonly referred to as the background noise level. |
| $L_{eq}$ | Equivalent Noise Level—Energy averaged noise level over the measurement time. |
| $L_{max}$ | The maximum instantaneous noise level. |
| Night | Between 10.00 p.m. on one day and 7.00 a.m. on the following day as defined in the Noise EPP |
| Noise source | Premises or a place at which an activity is undertaken, or a machine or device is operated, resulting in the emission of noise |

| | |
|---|---|
| $R_W$ | Weighted Sound Reduction Index—means a measure of the sound attenuation performance of a building element, measured in controlled conditions in a laboratory. |
| $R_W+C_{tr}$ | means a weighted sound reduction index with spectrum adaptation placing greater emphasis on low frequency performance. |
| Separation distance | means the shortest distance (to the nearest metre), from an existing or future *designated sound source* to the nearest exposed point of the *building envelope* bounding a *habitable room*. |
| Sound Exposure Category (SEC) | means the degree to which a *habitable room* within a building is likely to be affected by external sound received by the *building envelope*. |

# Table of Contents

1 Introduction ..... 1

2 Development Plan ..... 2

3 Noise emission assessment ..... 4

3.1 Environmental noise policy ..... 4
3.2 Mechanical services noise ..... 5

4 Minister’s Specification SA 78B ..... 6

4.1 Separation to road and sound exposure categories ..... 6
4.2 Sound insulation ratings ..... 11
4.3 Construction requirements ..... 12

5 Conclusion ..... 15

# 1 Introduction

This report outlines the external noise intrusion and environmental noise emission assessment for the proposed development at 246 Unley Road, Unley. The proposed development is mixed use with commercial uses on the ground floor and residences on the first to sixth floors.

This report details the acoustic requirements and recommended construction requirements for this proposed development. The acoustic requirements are based on:

- Unley Council Development Plan (consolidated 30 May 2017)
- Minister's Specification SA 78B *Construction Requirements for the Control of External Sound*
- *Environment Protection (Noise) Policy 2007*.

The main acoustic issues addressed in this report are:

- facade constructions to control mixed use noise sources and road noise
- mitigation treatments to control noise emissions from external plant.

# 2 Development Plan

The proposed development is located within the Unley Council Area and the development needs to have regard to the Unley Council Development Plan.

## Zoning

The proposed site and adjacent land uses along Unley Road are located in an Urban Corridor Zone, Policy Area 17 - High Street (Unley Road). The residences to the west of the site are located in a Residential Streetscape (Built Form) Zone, Policy Area 8 - Compact (Built Form), Precinct 8.5.

The land uses principally promoted in the Urban Corridor Zone are residential and commercial, and those in the Residential Streetscape (Built Form) Zone are residential.

There are no relevant objectives and PDCS in the Urban Corridor Zone relating to noise emissions.

## Interface between land uses

There are some council wide objectives and PDCs that relate to noise, and they are included in 'Interface between Land Uses'.

> **Objective29:** Development located and designed to minimize adverse impact and conflict between land uses.
>
> **Objective30:** Protect community health and amenity from adverse impacts of development.
>
> **Objective31:** Protect desired land uses from the encroachment of incompatible development.
>
> **PRINCIPLES OF DEVELOPMENT CONTROL**
>
> **PDC 96** Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:…(b) noise
>
> **PDC 97** Development should be sited and designed to minimise negative impacts on existing and potential future land uses desired in the locality.
>
> **PDC 98** Development adjacent to a **Residential Zone** should be designed to minimise overlooking and overshadowing of adjacent dwellings and private open space.
>
> **PDC 99** Residential development adjacent to non-residential zones and land uses should be located, designed and/or sited to protect residents from potential adverse impacts from non-residential activities.
>
> **PDC 100** Sensitive uses likely to conflict with the continuation of lawfully existing developments and land uses desired for the zone should be designed to minimise negative impacts.
>
> **Noise Generating Activities**
>
> **PDC 102** Development that emits noise (other than music noise) should include noise attenuation measures that achieve the relevant *Environment Protection (Noise) Policy* criteria when assessed at the nearest existing noise sensitive premises.

Assessment of environmental noise emissions in accordance with the *Environment Protection (Noise) Policy* 2007 (Noise EPP) will demonstrate compliance with the objectives and PDCs relating to noise emissions.

## Air and Noise Overlay

The site is also located in a 'Designated Area' and adjacent to a 'Designated Road: Type B road' in the Noise and Air Emissions overlay in the Development Plan. Relevant Objectives and Principles of Development Control for sites affected by the overlay are:

> **Objective 1:** Protect community health and amenity from adverse impacts of noise and air emissions.
>
> **PDC 1** Noise and air quality sensitive development located adjacent to high noise and/or air pollution sources should:
>
> (a) shield sensitive uses and areas through one or more of the following measures:
>
> (i) placing buildings containing less sensitive uses between the emission source and sensitive land uses and areas;
>
> (ii) within individual buildings, place rooms more sensitive to air quality and noise impacts (e.g. bedrooms) further away from the emission source;
>
> (iii) erecting noise attenuation barriers provided the requirements for safety, urban design and access can be met;
>
> (b) use building design elements such as varying building heights, widths, articulation, setbacks and shapes to increase wind turbulence and the dispersion of air pollutants provided wind impacts on pedestrian amenity are acceptable;
>
> (c) locate ground level private open space, communal open space and outdoor play areas within educational establishments (including childcare centres) away from the emission source.

Application of Minister's Specification SA 78B *Construction Requirements for the Control of External Sound* will demonstrate compliance with the PDCs relating to the Noise and Air Emissions overlay.

# 3 Noise emission assessment

## 3.1 Environmental noise policy

Environmental noise emissions from the proposed development will have to comply with the *Environment Protection (Noise) Policy* 2007 (Noise EPP) and this is the most relevant guideline to address the requirements of the Development Plan.

The noise goals in the Noise EPP are based on the zoning of the development and the closest noise affected premises in the relevant development plan. The land uses primarily promoted by the zones are used to determine the environmental noise criteria with the indicative noise factors shown in Table 1.

**Table 1 Excerpt from Noise EPP—Table 2(subclause(1)(b))**

| Land use category | Indicative noise factor dB(A) | |
|---|---|---|
| | Day (7 am to 10 pm) | Night (10 pm to 7 am) |
| Rural living | 47 | 40 |
| Residential | 52 | 45 |
| Rural industry | 57 | 50 |
| Light industry | 57 | 50 |
| Commercial | 62 | 55 |
| General industry | 65 | 55 |
| Special industry | 70 | 60 |

As noted in Section 2, the development and the most affected noise sensitive premises are located in the Urban Corridor Zone and in the Residential Streetscape (Built Form) Zone, for which a mix of residential and commercial land uses and residential land uses only are primarily promoted respectively.

In accordance with Part 5 of the Noise EPP, the relevant criteria for this development will be an average of the relevant indicative noise factors less 5 dB(A). The application of Part 5 results in the following environmental noise criteria:

- 50 dB(A) during the day, 7 am to 10 pm
- 43 dB(A) at night, 10 pm to 7 am.

## 3.2 Mechanical services noise

The main noise source for this development is the operation of external mechanical plant. At this stage of the development process, detailed information on the air conditioning and ventilation equipment is not available. Sound power levels, noise attenuation and enclosures or barriers are to be designed during detailed design stage to ensure compliance with required noise emission levels.

During the detailed design phase, noise emissions from the external plant will be assessed and mitigation treatments adopted to ensure that noise emissions are limited to 50 dB(A) during the day (7 am to 10 pm) and 43 dB(A) at night (10 pm to 7 am) at the most affected residence, when assessed in accordance with the South Australian Environment Protection (Noise) Policy 2007.

# 4 Minister's Specification SA 78B

To determine the noise impacts of Unley Road and mixed use nature of the area, the assessment methodology outlined in the Minister's Specification SA 78B *Construction Requirements for the Control of External Sound* (SA 78B) has been adopted. SA 78B has been developed to address noise ingress from road, rail and mixed land use into residential developments. The internal noise criteria provided in SA 78B has been approved by the EPA and it is consistent with future policy regarding noise intrusion into dwellings.

## 4.1 Separation to road and sound exposure categories

SA 78B specifies minimum construction requirements for building facades based on a 'sound exposure category' (SEC), which is determined based on the separation distance to the road.

Unley Road is classified as a Type B road in the Unley Council Development Plan, and the relevant SEC for different separation distances to the road are shown in Table 2.

**Table 2 Relevant sound exposure categories based on separation distances for Type B Roads (50 – 60 km/hr)**

| Sound exposure category | Separation distance from road (m)(1) |
|---|---|
| No treatment required | > 60 m |
| 1 | 35 < 60 m |
| 2 | 20 < 35 m |
| 3 | 10 < 20 m |
| 4 | < 10 m |
| 5 | N/A |

(1) Distance from 3 m within the transport corridor boundary.

The facades facing Unley Road have a separation distance of 9 – 27 m (varying with the height of the building). As such, the range of applicable SECs is 1 – 4. The SEC varies with distance and for facades that are not directly exposed to the noise source (in accordance with the application of SA 78B). The minimum SEC applicable for the development is SEC 1 as the site is located in a 'Designated Area'. The relevant SECs for the development are shown in Figure 1, Figure 2, Figure 3, and Figure 4.

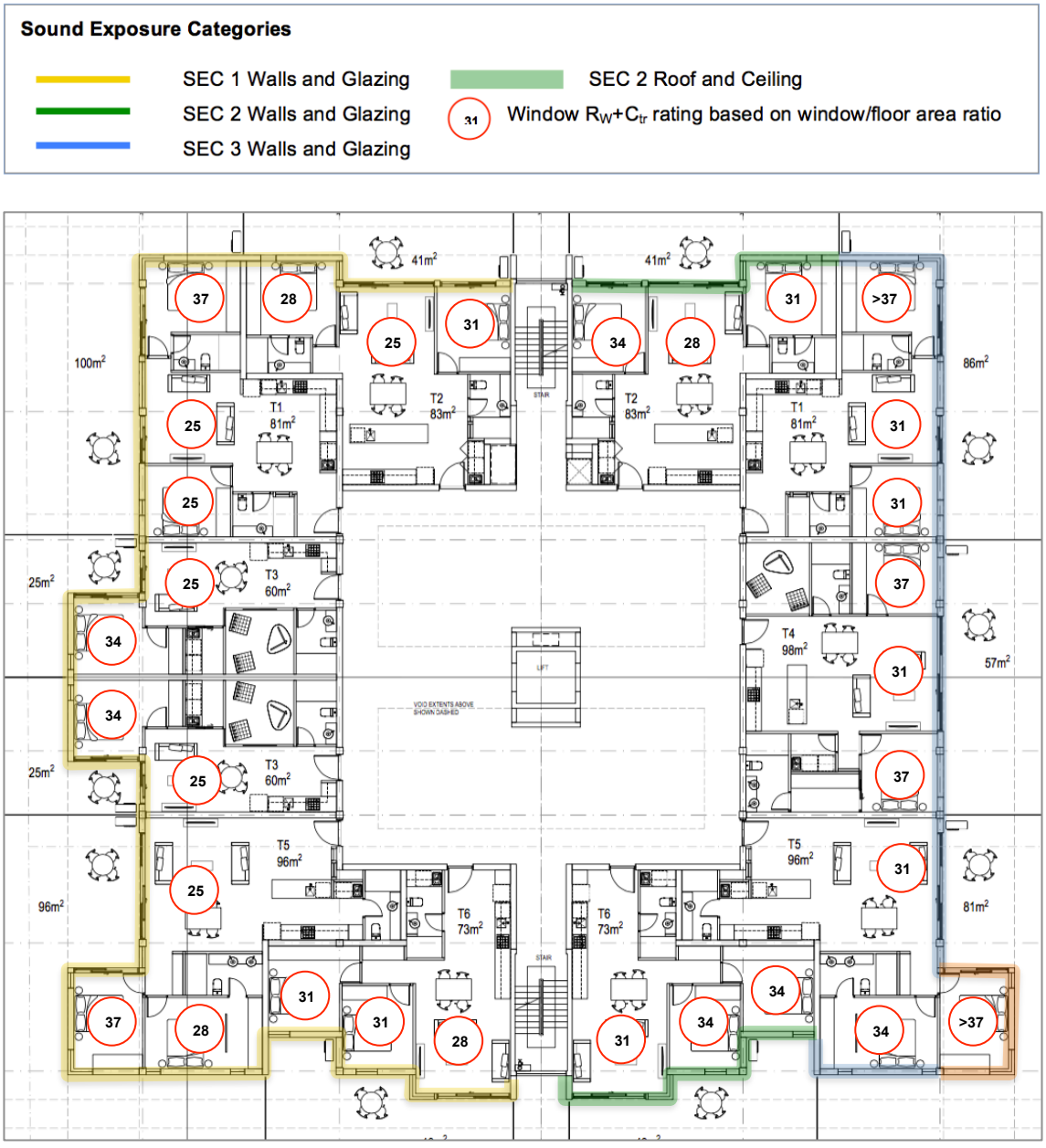


**Figure 1 First Floor**

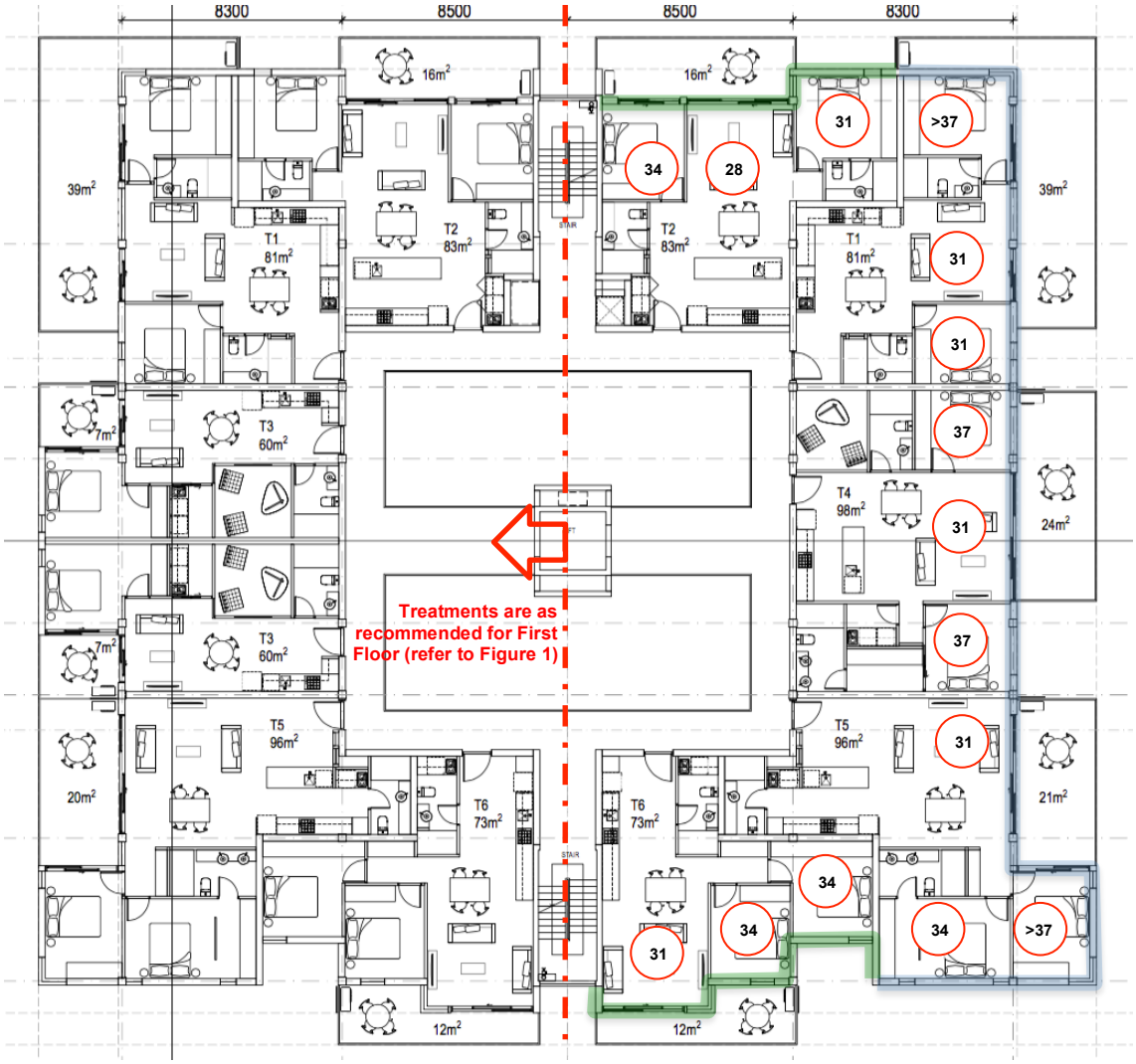


**Figure 2 Typical floors—Level 2 – 4 requirements**

Note that the SEC and glazing requirements for apartments T2 and T6 (on the eastern side of the stairwells) can have progressively less stringent requirements for the higher floors. However, as the requirements for SEC 2 walls and the glazing ratings as shown are not overly onerous, they have been kept as required for Level 2 for simplicity. This can be revisited if required.

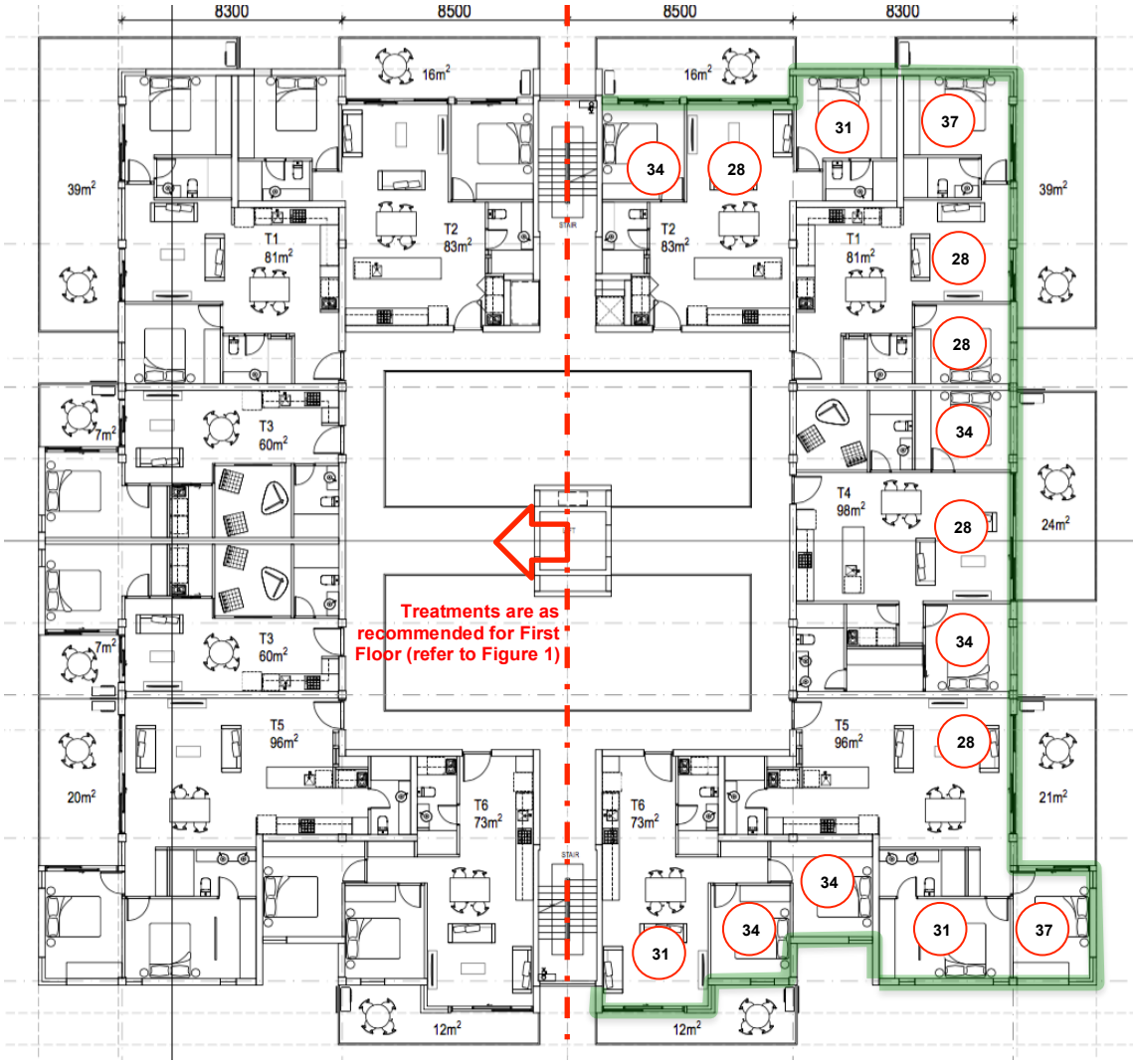


**Figure 3 Level 5 requirements**

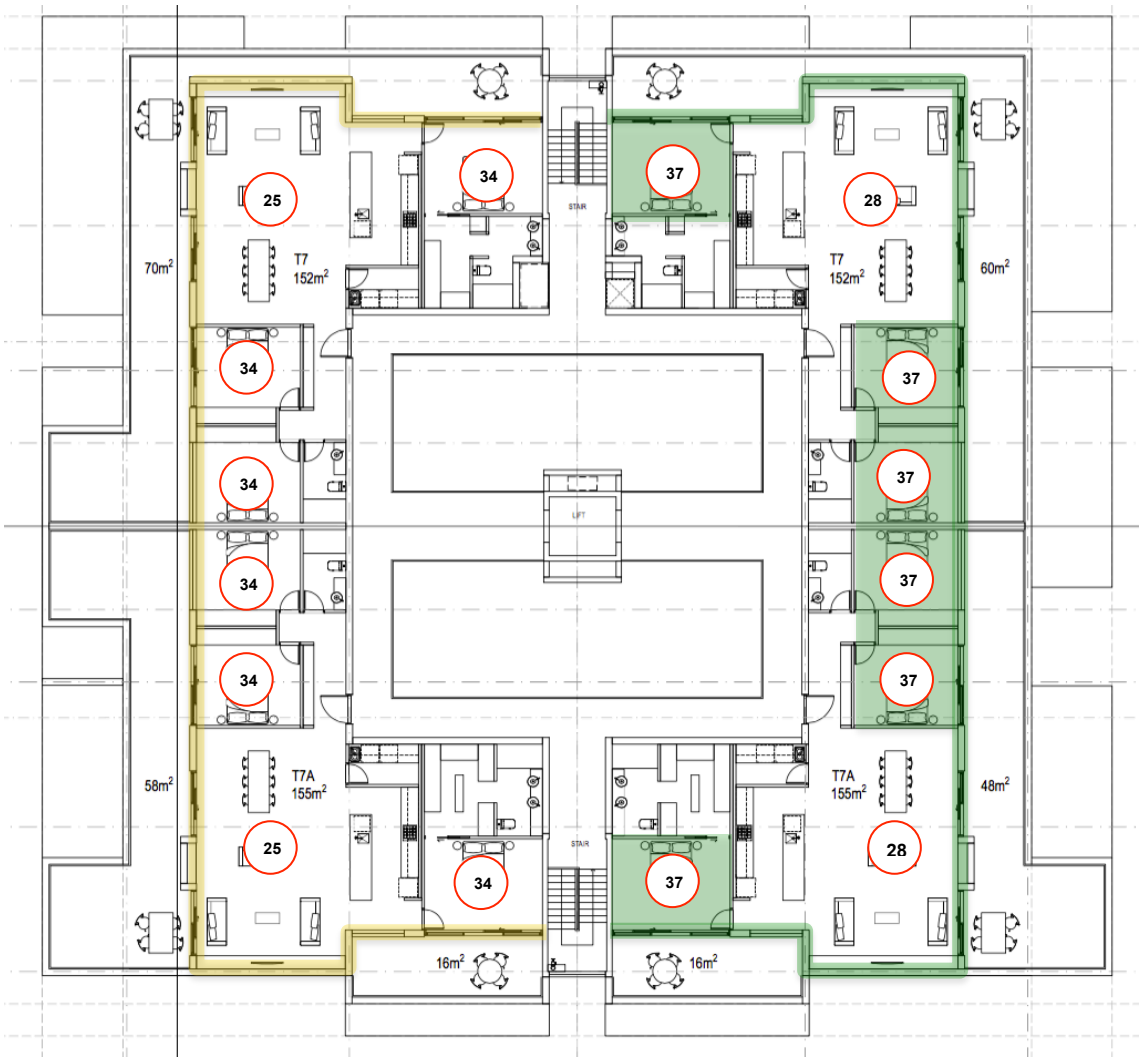


**Figure 4 Top floor - Penthouses**

## 4.2 Sound insulation ratings

The appropriate sound insulation ratings for the different relevant SECs are outlined in Table 3.

**Table 3 Minimum acoustic requirements for habitable rooms**

| SEC | Building element | Location | Acoustic rating |
|---|---|---|---|
| 1 | External walls | All habitable rooms | $R_W + C_{tr} \geq 45$ |
| | Windows & external glass doors | Refer to Table 4 and as shown in Figures above | |
| 2 | Ground floor | All habitable rooms | $R_W + C_{tr} \geq 50$ |
| | External walls | All habitable rooms | $R_W + C_{tr} \geq 50$ |
| | Windows & external glass doors | Refer to Table 4 and as shown in Figures above | |
| | External doors other than glass doors | All habitable rooms | $R_W \geq 27$ |
| | Roof and ceiling | Bedrooms | $R_W + C_{tr} \geq 35$ |
| 3 | Ground floor | All habitable rooms | $R_W + C_{tr} \geq 50$ |
| | External walls | All habitable rooms | $R_W + C_{tr} \geq 50$ |
| | Windows & external glass doors | Refer to Table 4 and as shown in Figures above | |
| | External doors other than glass doors | All habitable rooms | $R_W \geq 30$ |
| | Roof and ceiling | Bedrooms | $R_W + C_{tr} \geq 40$ |
| | | All other habitable rooms | $R_W + C_{tr} \geq 35$ |
| 4 | Ground floor | All habitable rooms | $R_W + C_{tr} \geq 50$ |
| | External walls | All habitable rooms | $R_W + C_{tr} \geq 50$ |
| | Windows & external glass doors<br>*External glass doors are not permitted in bedrooms* | Refer to Table 4 and as shown in Figures above | |
| | External doors other than glass doors | All other habitable rooms | $R_W \geq 30$ |
| | Roof and ceiling | Bedrooms | $R_W + C_{tr} \geq 45$ |
| | | All other habitable rooms | $R_W + C_{tr} \geq 40$ |

The sound insulation ratings for windows and external glass doors are outlined in Table 4 based on the area of the window/glass door based on floor area. The required glazing ratings are also shown in in Figure 1, Figure 2, Figure 3, and Figure 4.

**Table 4 Minimum acoustic requirements for windows and external glass doors**

| Room | Area of window and external glass doors as a percentage of the floor area of the room | Designated sound exposure category | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| Bedroom and attached non-habitable rooms | Not more than 20% | 25 | 28 | 31 | 34 | * |
| | More than 20% but not more than 40% | 28 | 31 | 34 | * | * |
| | More than 40% but not more than 60% | 31 | 34 | * | * | * |
| | More than 60% but not more than 80% | 34 | * | * | * | * |
| | More than 80% | 37 | * | * | * | * |
| Habitable rooms (other than bedrooms and enclosed kitchens) and attached non-habitable rooms | Not more than 20% | 22 | 25 | 28 | 31 | 34 |
| | More than 20% but not more than 40% | 25 | 28 | 31 | 34 | * |
| | More than 40% but not more than 60% | 28 | 31 | 34 | * | * |
| | More than 60% but not more than 80% | 31 | 34 | * | * | * |
| | More than 80% | 34 | * | * | * | * |

* Windows and external glass doors are outside the scope of the Deemed-to-Satisfy provisions.

## 4.3 Construction requirements

### Roof and ceiling

The indicative roof and ceiling construction is:

- Metal deck roof
- Bulk insulation
- Variable ceiling cavity (varying from approximately 1200 – 400 mm)
- Suspended 13 mm plasterboard ceiling.

The proposed ceiling will achieve $R_w + C_{tr} \geq 35$ rating with a minimum 500 mm cavity. A cavity of at least 500 mm will be required over bedrooms for the penthouse apartments facing Unley Road (refer to Figure 4). For all other areas, a minimum 400 mm cavity will be appropriate.

## External walls

The external walls are for Level 1 – Level 5 are to have the following indicative construction

- 175 – 200 mm precast concrete
- 92 mm steel stud frame with 20 mm cavity to concrete
- bulk insulation
- plasterboard internal lining.

This construction will achieve the minimum $R_w + C_{tr} \geq 50$ airborne noise requirement for SEC 2 and 3 walls.

The external walls are for the top floor are to be lightweight double stud walls with top hats and an external metal cladding. To achieve the required ratings with this type of construction, the following is recommended:

- For SEC 2—$R_w + C_{tr} \geq 50$:
  - 2 x 13 mm sound rated plasterboard internal lining
  - two sets of 92 mm steel stud frame with minimum 50 mm cavity to concrete
  - bulk insulation
  - 1 x 13 mm plasterboard or 1 x 6 fibre cement sheet lining (or equivalent)
  - external metal cladding on top hats.
- For SEC 1—$R_w + C_{tr} \geq 45$:
  - 1 x 13 mm sound rated plasterboard internal lining
  - two sets of 92 mm steel stud frame with minimum 50 mm cavity to concrete
  - bulk insulation
  - 1 x 13 mm plasterboard or 1 x 6 fibre cement sheet lining (or equivalent)
  - external metal cladding on top hats.

## External windows and doors

The recommended constructions for the external windows and doors are outlined in Table 5. Note that acoustically equivalent constructions (such as thermal double glazing) can be adopted; however, the constructions are provided in Table 5 as a guide as to the types of constructions required.

**Table 5 Example external window and door constructions**

| Acoustic criteria | Example external windows and doors construction |
|---|---|
| $R_w+C_{tr} > 37$ | • Where the resultant rating is >37 we recommend that the area of glazing be reduced so that the $R_W+C_{tr}$ rating be reduced to at least 34 (refer to the area requirements in Table 4). |
| $R_w+C_{tr}$ 37 | • 12.5 mm VLam Hush glass windows and side hinged doors<br>• No sliding doors—where sliding doors are nominated, we recommend that the area of glazing be reduced so that the $R_W+C_{tr}$ rating be reduced to at least 34 (refer to the area requirements in Table 4) |
| $R_w+C_{tr}$ 34 | • 10 mm glass windows and side hinged doors<br>• 12.5 mm VLam Hush glass sliding doors |

| Acoustic criteria | Example external windows and doors construction |
|---|---|
| $R_w+C_{tr}$ 31 | • 6 mm glass windows and side hinged doors<br>• 10 mm glass sliding door |
| $R_w+C_{tr}$ 28 | • 6 mm glass windows and side hinged doors<br>• 6 mm glass sliding door |
| $R_w+C_{tr}$ 25 | • 3 mm glass windows and side hinged doors<br>• 6 mm glass sliding door |

All openable windows and doors are to have the following or acoustically equivalent seals:

- sliding doors are to have:
  - Schlegel Q-Lon T-Slot seals on the lock and mullion
  - Schlegel Fin-Seal on the rails
- windows awning style with rubber compression seals around the perimeter such as Schlegel Q-Lon T-Slot seals, or sliding with seals as indicated for the sliding doors
- hinged doors are to have:
  - high quality rubber contact seals for the head and the jambs acoustically equivalent to Kilargo IS1212/1515 or Raven RP120/150
  - dropdown seal at the bottom acoustically equivalent to Kilgaro IS8090si or Raven RP38.

## Ventilation

**Natural ventilation**

In SEC 1 – 3 natural ventilation must be provided in accordance with the NCC.

**Mechanical ventilation**

In SEC 4 SA 78B states that the following must be provided:

> A mechanical ventilation system that complies with AS 1668.2 - The use of mechanical ventilation and air-conditioning in buildings must be provided; and
>
> (a) Relief air paths (or evaporative air conditioning) must be fully ducted to allow for the operation of the system with windows and external doors closed; and
>
> (b) The fresh air (or make up air) inlets and exhaust air outlets must be at a point on the building furthest from the designated sound source where practicable.

**Penetrations**

For building facade penetrations, SA 78B states that:

> (a) Where a part of the *building envelope* has a *sound exposure category*, any plant or service, such as an air-conditioning unit, ventilation device or ductwork that pass through that part, or any permanent opening in that part, must not diminish the $R_W + C_{tr}$ of the part.
>
> (b) Penetrations of the *building envelope* by pipes, ducts, or conduits or the like must have the space between the *building envelope* and the pipes, ducts, or conduits or the like caulked or filled with mortar.

# 5 Conclusion

An external noise intrusion and environmental noise emission assessment has been undertaken for the proposed mixed used development at 246 Unley Road, Unley. The assessment has taken into account the relevant noise requirements of the Unley Council Development Plan, Minister's Specification SA 78B, and the *Environment Protection (Noise) Policy 2007*.

This assessment has demonstrated the following:

- The Unley Council Development Plan has specific noise requirements relating to noise ingress and noise emissions, and references the Minister's Specification SA 78B and the *Environment Protection (Noise) Policy 2007*.
- Facade noise mitigation treatments detailed in this report are suitable to attenuate noise intrusion from traffic on Greenhill Road into the residences in accordance with Minister's Specification SA 78B *Construction Requirements for the Control of External Sound*.
- External mechanical plant located on the plant platforms will be designed and treated at detailed design stage to achieve appropriate levels at the most affected receptors in accordance with the requirements of the *Environment Protection (Noise) Policy 2007*.

On this basis the proposed mixed used development at 246 Unley Road will be able to be constructed and operate within the noise requirements of the Unley Council Development Plan, Minister's Specification SA 78B, and the *Environment Protection (Noise) Policy 2007*.

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DESIGN +
ARCHITECTURE SA

File No:
2014/11235/01

Ref No:
12018639

25 October 2017

Karl Woehle
Planning Officer - CBD & Inner Metro Team
Strategic Development Assessment
Planning and Development
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
Adelaide SA 5000

For the attention of the State Commission Assessment Panel (SCAP)

# 246 Unley Road, Unley

Further to the referral 090/M008/17 received 22 August 2017 and the additional information received 25 September 2017 pertaining to the development application at the above address and in my capacity as a statutory referral in the State Commission Assessment Panel (SCAP), I would like to offer the following comments for your consideration.

In principle, I support the project team's aspiration to deliver a high quality mixed used development in this location. The proposed scale of development will result in a significant structure in the current context and has a potential to set a precedent for future developments. Therefore in my opinion, a responsibility exists for the project team to deliver a high quality design outcome, particularly in relation to contextual response and residential amenity. The project was not presented to the Design Review panel, however from considering the material supplied with the referral and evaluating the design merit of the project I am unable to offer my support to the planning application in its current form. I recommend that further emphasis is given to undertaking of a detailed contextual analysis with the view to demonstrate how the proposal responds to the current and future context of the site.

The subject site, of approximately 2,500 square metres, is located on the corner of Unley Road and Hart Avenue. Unley Road is currently characterised by one and two storey retail and commercial tenancies, however the site is within the Urban Corridor Zone, High Street (Unley Road) Policy Area, which envisages developments up to five storeys and 18.5 metres. There are a number of Local heritage places in the site's proximity, including the single storey Unley Institute and Library building immediately opposite on Unley Road. The existing building on the subject site physically abuts a single storey retail building to the south. To the west of the project site, there is a single storey dwelling presenting to Hart Avenue, which is located within the Urban Corridor Zone.

The proposal is for a seven storey building with an overall above ground height of 26.8 metres, which is significantly above the maximum envisaged height of

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

File No:
2014/11235/01

Ref No:
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five storeys and 18.5 metres for the site. Acknowledging that the built form is within the 30 degree building envelope with the intent to manage interface issues with the adjoining residential zone, I do not support the proposed height. In my opinion, the proposal is yet to demonstrate an exemplary design outcome, particularly in terms of massing and architectural expression to manage the physical and visual impacts of the scale and bulk of the proposal. In addition, the development does not offer significant merit in terms of public realm contribution or residential amenity to justify the over height. I am also concerned about the lack of setback on the Hart Avenue boundary beyond 20 metres from Unley Road as envisaged by the Development Plan. In my opinion, the setback requirement along Hart Avenue is particularly important given the narrowness of the street and the established front setback pattern of existing residential properties to the east. I recommend review of the built form composition along the Hart Avenue frontage to better integrate the proposal to the established scale, pattern and character of the residential surroundings.

The proposal includes a two storey podium that extends to the north, east and south boundaries. Levels two to five are set back on all sides with the intent to define the podium from the built form above. The top apartment floor is further setback presenting a five level datum line as a response to the zone policies and to reduce the visual impact, which I support. I also support the provision of the podium, however the submitted documentation does not include sufficient contextual information, including the information on the abutting building to the south, to demonstrate the relationship between the proposed podium and the existing streetscape. I recommend additional information be provided to demonstrate how the site context has informed the modelling and articulation of the podium and overall built form. I am also of the opinion that the solid expression of the balconies does not assist in achieving a recessive built form above the podium as intended. I recommend review of the massing and three dimensional articulation strategy for the built form above the podium to further reduce the apparent bulk.

The documents provided indicate a future application to shift the western boundary eastward. Acknowledging that the boundary realignment and a potential development on the adjoining site do not form part of this application, I note that informed comments on the interface conditions cannot be provided without the information regarding the anticipated development. Currently the proposal does not include any strategies to mitigate overlooking of the neighbouring residential properties apart from creating separation from the residential zone boundary. I recommend development of additional effective strategies to manage residential interface impacts, including overlooking.

I support the provision of the commercial and retail tenancies on the ground floor along the Unley Road frontage. However I am concerned that more than half of the ground floor is dedicated to car parking and crossovers. I am particularly concerned about the presentation to Hart Avenue, which includes two two-lane crossovers and Back of House structures. While the services structures are incorporated into the podium form, the width of the driveways are such that the at grade car parking area is highly visible from the street. Acknowledging the design intent to develop the Hart Avenue footpath to create alfresco dining opportunities as described by the Landscape Concept drawings, I note the works are outside the site boundaries and do not form part of this application. I recommend review of the ground floor

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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configuration to increase the extent of active use spaces along Hart Avenue to positively contribute to the public realm. Consolidation of the crossovers is also recommended to minimise the visibility of the car parking area and to reduce the detrimental effect on local traffic conditions.

The apartment entry is located centrally on the Unley Road frontage and the apartment lobby is accessed by a corridor between the central tenancy spaces. While I support the generous width of the entry corridor, I do not support the location of the residential lobby, which is placed in the car parking area. In addition, I am concerned that access and way finding through the car park compromise the safety and amenity of the residents. I recommend review of the residential entry sequence strategies to provide a high quality entry experience cognisant of the high amenity apartment offerings as envisaged.

The proposed podium is masonry in character, which I support. However, an opportunity exists to strengthen the solidity and vertical connectivity of the podium by anchoring the built form to the ground. I recommend review of the podium expression at the northeast and southeast corners.

The architectural expression of the built form above the podium is articulated by framed balconies in a contrasting colour and layers of concrete slab edges. Vertical 'green' screens are also included on all facades. I support the intent to address the scale of the building by providing a breakdown in built form. However in my opinion, I am yet to be convinced that the scale of the bold cubic forms are informed by the established character and fine grain of the locality. I recommend development of the architectural expression to mitigate the visual impact of the built form bulk, referencing the fine grain, small scale and vertical proportions typical of the area. The top apartment floor is setback and clad with dark coloured metal cladding to reduce the visual impact, which I support.

The apartments are positioned on the four edges of rectangular floor plates around the central atrium above the communal courtyard on the first floor. The atrium is approximately 17 metres by 16 metres in size and includes central bridge links on upper floors to connect apartments with the centrally located lift. The atrium is proposed with a translucent roof and openable louvres at the top to allow for light and ventilation. Vertical greening is also proposed to the full height of the atrium. While I am concerned that the proposed configuration has contributed to the large footprint and the massing of the building, I support the layout on balance as it includes variety of landscape elements in communal areas that can offer high quality residential amenity. My ongoing support is contingent on the resolution of the design details to ensure the full delivery of all the landscape concepts within the courtyard and the atrium spaces during the upcoming phases of design development.

I support the mix of apartment types proposed. While the apartments are convincing in terms of size and functional layouts, I do not support the provision of internal bedrooms as shown in apartment type T4. I recommend refinement of apartment layouts to ensure a high level of residential amenity for all habitable rooms. While I support the size and dimensions of many of the balconies, I note that the balconies for apartment types T3 and T6 are significantly undersized for two bedroom apartments. While the proposal includes the communal courtyard on the

Level 1
26-28 Leigh Street
Adelaide SA 5000

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Adelaide SA 5001

DX 171

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DESIGN +
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first floor, in my opinion, the courtyard is not designed for outdoor activities to supplement the shortfall in private open spaces. I recommend review of apartment typology to ensure adequate private open space is provided for all apartments. In addition, I do not support the location of air-conditioning condenser units on balconies, due to adverse impacts on the amenity of that space and the street. I recommend relocation of the air conditioning condensers.

The proposal lacks clarity in regards to the threshold treatments at building edges along the street frontage. It is important for the success of the overall proposal to include a well-considered threshold response, including paving transitions, that contributes positively to the public realm. I request additional information be provided regarding the materials and finishes of the external and interface areas. I also recommend ongoing discussion with the City of Unley regarding the development of the Hart Avenue footpath, with the view to achieve a mutually appropriate outcome, informed by a building management, maintenance and public safety requirements, lighting and landscaping strategies.

The proposal includes car parking spaces on the ground and one and a half basement levels. I support the provision of car parks in the basement. However I recommend development of sleeving and/or screening strategy for the ground level car parking spaces to minimise the risk of poor urban design outcomes.

The proposal is characterised by the central atrium with the associated vertical greening and the landscaped courtyard, with the intent to positively contribute to the residential amenity by providing natural light and ventilation. A convincing demonstration of the successful workings of the atrium will be critical to my support for this project. In addition, it will be important for the success of the overall proposal to clearly demonstrate the environmental performance of the atrium and the building as a whole.

To ensure the most successful design outcome is achieved the State Commission Assessment Panel (SCAP) may like to consider particular aspects of the project, which would benefit from protection as part of the planning permission, such as:

- Review of the building height.
- Review of the built form composition along the Hart Avenue frontage.
- Further information on site context to demonstrate the relationship between the proposal and the existing and future context.
- Review of massing and three dimensional articulation strategy of the built form above the podium to reduce the apparent bulk.
- Review of the presentation to Hart Avenue with the view to increase the extent of active use spaces.
- Consideration of crossover consolidation.
- Development of effective strategies to manage residential interface impacts, including overlooking.
- Review of apartment entry sequence.
- Review of the podium expression at the northeast and southeast corners.
- Further information that demonstrates how the proposed vegetation in the central courtyard and atrium will be sustained and maintained.

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GPO Box 1533
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- Refinement of apartment layouts to eliminate inboard bedrooms.
- Review of apartment typology to ensure all apartments have access to adequately sized private open spaces.
- Relocation of air conditioning condensers from balconies.
- Further information that demonstrates the environmental performance of the atrium and communal circulation spaces.
- A high quality of external materials for building and landscaped areas supported by the provision of a materials sample board.

Yours sincerely

Nick Tridente
Associate Government Architect

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

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File No:
2014/11235/01

Ref No:
12253916

10 January 2018

Karl Woehle
Planning Officer - CBD & Inner Metro Team
Strategic Development Assessment
Planning and Development
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
Adelaide SA 5000

For the attention of the State Commission Assessment Panel (SCAP)

# 246 Unley Road, Unley

Further to the referral 090/M008/17 received 22 August 2017, the additional information received 25 September 2017, and the revised documents received 19 December 2017 pertaining to the development application at the above address and in my capacity as a statutory referral in the State Commission Assessment Panel, I would like to offer the following comments for your consideration. This letter supersedes the previous referral letter dated 25 October 2017.

In principle, I support the project team's aspiration to deliver a high quality mixed used development in this location. The proposed scale of development will result in a significant structure in the current context and has a potential to set a precedent for future developments. Therefore in my opinion, a responsibility exists for the project team to deliver a high quality design outcome, particularly in relation to contextual response and residential amenity. The project was not presented to the Design Review panel, however from considering the material supplied with the referral and evaluating the design merit of the project, I remain concerned regarding certain aspects of the project, including the height, the architectural expression and the project's relationship to the current and future context of the site.

The subject site, of approximately 2,500 square metres, is located on the corner of Unley Road and Hart Avenue. Unley Road is currently characterised by one and two storey retail and commercial tenancies, however the site is within the Urban Corridor Zone, High Street (Unley Road) Policy Area, which envisages developments up to five storeys and 18.5 metres. There are a number of Local heritage places in the site's proximity, including the single storey Unley Institute and Library building immediately opposite on Unley Road. The existing building on the subject site physically abuts a single storey retail building to the south. To the west of the project site, there is a single storey dwelling presenting to Hart Avenue, which is located within the Urban Corridor Zone.

The proposal is for a seven storey building with an overall above ground height of 26.8 metres, which is significantly above the maximum envisaged height of

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five storeys and 18.5 metres for the site. Acknowledging that the built form is within the 30 degree building envelope with the intent to manage interface issues with the adjoining residential zone, I do not support the proposed height. In my opinion, the proposal is yet to demonstrate an exemplary design outcome, particularly in terms of massing and architectural expression to manage the physical and visual impacts of the scale and bulk of the proposal. I am also concerned about the lack of setback on the Hart Avenue boundary beyond 20 metres from Unley Road as envisaged by the Development Plan. In my opinion, the prescribed minimum setback along Hart Avenue is particularly important given the narrowness of the street and the established front setback pattern of existing residential properties to the east. I recommend review of the building setback along the Hart Avenue frontage to better integrate the proposal to the established scale, pattern and character of the residential surroundings.

The proposal includes a two storey podium that extends to the north, east and south boundaries. Levels two to five are set back on all sides with the intent to define the podium from the built form above. The top apartment floor is further setback presenting a five level datum line as a response to the zone policies and to reduce the visual impact, which I support. I also support the provision of the podium, and acknowledge that the podium height and proportion is set to respond to the height of the former National Bank building, a Local heritage place along Unley Road to the north of the subject site. However, I am of the opinion that the bold framing of the balconies over multiple levels does not assist in achieving a recessive built form above the podium as intended. I recommend review of the massing and three dimensional articulation strategy for the built form above the podium to further reduce the apparent bulk.

The documents provided indicate a future application to shift the western boundary eastward. Acknowledging that the boundary realignment and a potential development on the adjoining site do not form part of this application, I note that informed comments on the interface conditions cannot be provided without the information regarding the anticipated development. Currently the proposal does not include any strategies to mitigate overlooking of the neighbouring residential properties apart from creating separation from the residential zone boundary. I recommend development of additional effective strategies to manage residential interface impacts, including overlooking.

I support the provision of the commercial and retail tenancies on the ground floor along the Unley Road and Hart Avenue frontages. I also strongly support the consolidation of driveways on Hart Avenue into one. The relocation of the transformer from the Unley Road frontage to the Hart Avenue frontage and incorporation of the services structures to the podium form is also supported.

The apartment entry is located centrally on the Unley Road frontage and the apartment lobby is accessed by a corridor between the central tenancy spaces. I support the generous width of the entry corridor. I recommend further development of the access and wayfinding strategies through the car parking levels during the next phase of design development to ensure the safety and amenity of the residents.

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26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

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The proposed podium is masonry in character, which I support. The architectural expression of the built form above the podium is articulated by framed balconies in a contrasting colour and layers of concrete slab edges. Vertical 'green' screens are also included on all facades. I support the intent to address the scale of the building by providing a breakdown in built form. However, I am yet to be convinced that the scale of the bold cubic forms are informed by the established character and fine grain of the locality. I recommend development of the architectural expression to mitigate the visual impact of the built form bulk, referencing the fine grain, small scale and vertical proportions typical of the area. The top apartment floor is setback and clad with dark coloured metal cladding to reduce the visual impact, which I support.

The apartments are positioned on the four edges of rectangular floor plates around the central atrium above the communal courtyard on the first floor. The atrium is approximately 17 metres by 16 metres in size and includes central bridge links on upper floors to connect apartments with the centrally located lift. The atrium is proposed with a translucent roof and openable louvres at the top to allow for light and ventilation. Vertical greening and horizontal screening are also proposed to the full height of the atrium. While I am concerned that the proposed configuration has contributed to the large footprint and the massing of the building, I support the layout on balance as it includes a variety of landscape elements in communal areas that can offer high quality residential amenity. My ongoing support is contingent on the resolution of the design details to ensure the full delivery of all the landscape concepts within the courtyard and the atrium spaces during the upcoming phases of design development.

I support the mix of apartment types proposed. While the apartments are convincing in terms of size and functional layouts, I do not support the provision of habitable rooms that rely on the communal circulation spaces for light and ventilation, as shown in apartment types T3 and T4. In my opinion, this configuration poses privacy issues for the residents. I recommend refinement of apartment layouts to ensure a high level of residential amenity for all habitable rooms. Generally, I do not support the location of air-conditioning condenser units on balconies, due to adverse impacts on the amenity of that space and the street. While I acknowledge the intent to screen the condensers, further information is required to demonstrate that the proposed arrangement successfully mitigates the environmental impacts on balcony user amenity.

The proposal lacks clarity in regards to the threshold treatments at building edges along the street frontage. It is important for the success of the overall proposal to include a well-considered threshold response, including paving transitions, that contributes positively to the public realm. I request additional information be provided regarding the materials and finishes of the external and interface areas. Acknowledging the design intent to develop the Hart Avenue footpath to create alfresco dining opportunities as described by the Landscape Concept drawings, I note the works are outside the site boundaries and do not form part of this application. I recommend ongoing discussion with the City of Unley regarding the development of the Hart Avenue footpath, with the view to achieve a mutually appropriate outcome, informed by a building management, maintenance and public safety requirements, lighting and landscaping strategies.

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GPO Box 1533
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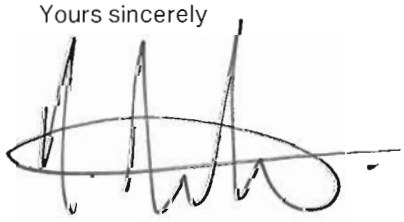
The proposal includes car parking spaces on the ground and one and a half basement levels. I support the provision of car parks in the basement, and sleeving of the ground level car parking spaces with an active use space.

The proposal is characterised by the central atrium with the associated vertical greening, horizontal green screening and the landscaped courtyard, with the intent to positively contribute to the residential amenity by providing natural light and ventilation. A convincing demonstration of the successful workings of the atrium will be critical to my support for this project. In addition, it will be important for the success of the overall proposal to clearly demonstrate the environmental performance of the atrium and the building as a whole.

To ensure the most successful design outcome is achieved the State Commission Assessment Panel (SCAP) may like to consider particular aspects of the project, which would benefit from protection as part of the planning permission, such as:

- Review of the building height.
- Review of the building setback along the Hart Avenue frontage.
- Review of massing and three dimensional articulation strategy of the built form above the podium to reduce the apparent bulk.
- Development of effective strategies to manage residential interface impacts, including overlooking.
- Further information that demonstrates how the proposed vegetation in the central courtyard and atrium will be sustained and maintained.
- Refinement of apartment layouts to address privacy issues.
- Relocation of air conditioning condensers from balconies, or provision of additional information to demonstrate effective screening of condensers and successful mitigation of environmental impacts.
- Further information that demonstrates the environmental performance of the atrium and communal circulation spaces.
- A high quality of external materials for building and landscaped areas supported by the provision of a materials sample board.

Yours sincerely



Nick Tridente
Associate Government Architect

Level 1
26-28 Leigh Street
Adelaide SA 5000

GPO Box 1533
Adelaide SA 5001

DX 171

T- +61(0)8 8402 1884
E- odasa@sa.gov.au

Government of South Australia

*In reply please quote* 2017/01926/01, *Process ID:* 480920
*Enquiries to* Vittorio Varricchio
*Telephone* (08) 8226 8393
*Facsimile* (08) 8226 8330
*E-mail* dpti.luc@sa.gov.au

Government of South Australia
Department of Planning, Transport and Infrastructure

SAFETY AND SERVICE – Traffic Operations

GPO Box 1533
Adelaide SA 5001

Telephone: 61 8 8226 8222
Facsimile: 61 8 8226 8330

ABN 92 366 288 135

30/11/2017

Mr Karl Woehle
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Dear Mr Woehle,

**SCHEDULE 8 - REFERRAL RESPONSE**

| | |
|---|---|
| **Development No.** | 090/M008/17 |
| **Applicant** | Catcorp Pty Ltd |
| **Location** | 246 Unley Road, Unley |
| **Proposal** | Seven Storey Mixed Use Building |

I refer to the above development application forwarded to the Safety and Service Division of the Department of Planning, Transport and Infrastructure (DPTI) in accordance with Section 37 of the *Development Act 1993*. The proposed development involves development adjacent a main road as described above.

The following response is provided in accordance with Section 37(4)(b) of the *Development Act 1993* and Schedule 8 of the *Development Regulations 2008*.

**THE PROPOSAL**

The application proposes to demolish all existing structures and construct a seven storey mixed use building including parking and landscaping. DPTI has previously provided comments regarding a previous application upon this site (DA 090/001/15) in a letter dated 19/01/2015.

**CONSIDERATION**

The subject site abuts Unley Road, an arterial road under the care control and management of DPTI, as well as Hart Avenue, a local road under the care, control and management of City of Unley. Unley Road is identified as a Major Cycling Route, High Activity Pedestrian Area, High Frequency Public Transport Corridor and Peak Hour Route under DPTI's *'A Functional Hierarchy for South Australia's Land Transport Network'*. At this location Unley Road has an AADT of 26,100 vehicles per day (2.5% commercial vehicles).

**Road Safety and Access**

It is DPTI policy to minimise the number of access points on the arterial road network in the interests of road safety. The subject site currently has no direct access to/from Unley Road. As all access is via Hart Avenue, the access arrangement is consistent with the above policy. No direct access to/from Unley Road should be permitted.

It is noted that, unlike the previous proposal on the subject site, no connection is proposed between Hart Avenue and Opey Avenue. This results in a poorer outcome as traffic will not be able to distribute across the two roads and their associated junctions. Furthermore,

the location of the public car park access is substantially closer to the Unley Road / Hart Avenue junction than the previous proposal and may be affected by queues at the junction during peak periods. It is considered that as the site is being redeveloped, the development should provide an access configuration that actively creates connectivity between Opey Avenue and Hart Avenue for both the public and residential car parks and maximises the separation between the vehicular access to the site and the adjacent junction. It is also recommended that the number of access points be reduced to a single access on Hart Avenue in order to maximise separation form the junction and to improve pedestrian safety. Failure to achieve the above is contrary to good design and is also inconsistent with Development Plan policy. Consequently, it is strongly recommended an integrated access arrangement with the land to the south be pursued.

The applicant has also provided turn paths of a Medium Rigid Vehicle (MRV), which would be the largest vehicle expected on-site. Turn paths show that a MRV is intended to reverse into the site from Hart Avenue to access the site. However, this may lead to vehicular conflict adjacent the access and may impact on the safety and efficiency of the adjacent road network. Therefore, consideration should be given to servicing the site with a vehicle that could manoeuvre on-site to enter and exit the site in a forward direction.

Furthermore, it is noted that Hart Avenue is relatively narrow and that simultaneous two-way access is limited to immediately adjacent the Unley Road / Hart Avenue junction due to the presence of on-street parking along Hart Avenue. This parking also impacts on the potential for service vehicles to safely access the site. Consequently, in order to ensure that simultaneous two-way vehicle movements are achievable along the subject section of Hart Avenue, on-street parking on both sides of the road should be banned between the Unley Road / Hart Avenue junction and the westernmost access to the site.

**UnleyLINK**

On 6 July 2015, the Minister for Transport and Infrastructure released the revised Integrated Transport and Land Use Plan (ITLUP). The Plan is designed to guide private, Federal, State and Local Government investments into the transport system for the next 30 years, and play a key role in ensuring this is fully integrated with land use and strategic infrastructure planning.

The Plan identifies UnleyLINK (a tram line running from the City, along Unley Road and Belair Road) as a medium to long term project. The exact timing of this project has yet to be determined and details of the road and tram track layout along Unley Road will be subject to further investigations and consultation. Subsequently, a number of potential access impacts for Unley Road and therefore the subject site may occur.

**Road Widening**

This site is affected by a possible requirement shown on the Metropolitan Adelaide Road Widening Plan (MARWP) for a 4.5 metres x 4.5 metres cut-off at the Unley Road / Hart Avenue corner of this site for future road purposes. The consent of the Commissioner of Highways under the Metropolitan Adelaide Road Widening Plan Act is required to all building works on or within 6.0 metres of the possible requirement.

Plans provided to DPTI show that the development would not provide any setback from the Unley Road property boundary and would encroach within the 4.5 metre by 4.5 metre cut-off at the Unley Road / Hart Avenue corner. It is also noted that the development would result in some encroachment into the road reserve of Unley Road.

It is also noted that the allotments along Unley Road immediately south of the site have had a 2.13 metres strip of land taken previously and dedicated to road. This area forms part of the parking bay on Unley Road. Furthermore, the development on the southern side of Opey Avenue is also set back approximately 2.0 metres from the Unley Road property boundary. It is also noted that the footpath at the subject location is relatively narrow and is kinked adjacent the south eastern corner of the site due to the footprint of

the existing buildings. In view of the above, it is strongly recommended that all structural elements associated with the development be located a minimum of 2.13 metres from the Unley Road property boundary (in line with the property boundaries to the south) and be kept clear of the 4.5 metres x 4.5 metres corner cut-off at the Unley Road / Hart Avenue corner.

The provision of increased setback would provide additional area adjacent Unley Road to enable improvements to the existing on-street parking bay on-street parking on Unley Road, facilitate future removal of the kink in the footpath to improve pedestrian comfort and amenity and potentially enable an increase the width of the Unley Road footpath in order to permit on-street retail or dining. This would substantially improve the opportunity for activation of this section of Unley Road. The exclusion of building works within the Unley Road / Hart Avenue corner cut-off would also improve driver sight lines at the Unley Road / Hart Avenue junction. This is consistent with SSD's previous comments regarding DA 090/001/15. It should also be noted that SSD directs all building works to be located outside of the 4.5 metres x 4.5 metres corner cut-off.

**CONCLUSION**

Whilst DPTI is generally supportive of the type of development proposed, DPTI considers that the development should be amended to show:

- All development being setback a minimum of 2.13 metres from the Unley Road property boundary and being kept clear of the 4.5 metres x 4.5 metres corner cut-off at the Unley Road / Hart Avenue junction.

- Access to Hart Avenue being consolidated to a single point located as far from the Unley Road / Hart Avenue junction as practicable.

- Provision of a vehicular link between Opey Avenue and Hart Avenue for all vehicles associated with the development in order to enable better traffic distribution to these two streets and their junctions.

In view of the above, DPTI requires the above to be addressed prior to approval and in particular directs that all building works be located outside of the 4.5 metres x 4.5 metres corner cut-off at the Unley Road / Hart Avenue junction.

Yours sincerely,

**MANAGER, TRAFFIC OPERATIONS**
For **COMMISSIONER OF HIGHWAYS**

9 October 2017

The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

***Attention: Karl Woehle***
Planning Officer
CBD & Inner Metro Team
Strategic Development Assessment
Planning and Development
Department of Planning, Transport and Infrastructure

Dear Sir/Madam

**INFORMAL REFERRAL COMMENTS – DA 090/M008/17 (APPIAN ID 2397)**
**244-246 UNLEY ROAD UNLEY**

Thank you for the informal referral received on the 28 August 2017 of the above-mentioned application lodged with the State Commission Assessment Panel, and invitation for comment within 6 weeks (9 October 2017) to assist the assessment process.

In accord with the Heads of Agreement with the State Government in relation to such applications, Council now provides informal comment on designated Council matters and observations on key local planning matters that require further analysis and assessment.

**Proposed Comments Summary**

The Council has concerns with the degree of variation from key planning policy parameters and local road and infrastructure impacts of the proposed redevelopment of 244-246 Unley Road, Unley, in its current form.

It is requested the range of matters raised in this report be given further consideration as part of the assessment process, including:

- Building height (and setbacks);
- Overlooking minimisation;
- Podium façade detailing and extent of footpath canopies;
- On-site parking provision, allocation, design and dimensions;


Civic Centre 181 Unley Road
Unley, South Australia 5061
Postal PO Box 1
Unley, South Australia 5061
Telephone (08) 8372 5111
Facsimile (08) 8271 4886
Email pobox1@unley.sa.gov.au
Website www.unley.sa.gov.au

- Site landscaping and lack of medium to large trees and roof-top gardens;
- Hart Avenue traffic and on-street parking management;
- Hart Avenue public realm implications including road configuration, lack of room for outdoor dining, loss of on-street parking, street trees pruning and planting;
- Waste and service vehicle limitations;
- Survey plan to confirm dimensions of site, buildings, Unley Road and Hart Avenue;
- Public notification categorisation;
- Planning Consent conditions.

Council has delegated to the Chief Executive Officer or his nominee(s) the authority to negotiate appropriate outcomes in regard to street trees, future public realm upgrades, canopy encroachments and outdoor dining arrangements should the application be approved.

## Background

The Urban Corridor Zone – High Street (Unley Road) Policy Area, allowing for mixed use development up to five (5) storeys (18.5 metres), was introduced into the Development Plan on the 31 October 2013 via the Corridors Development Plan Amendment.

Concurrently, the Minister for Planning amended Schedule 10 of the Development Regulations to make the State Commission Assessment Panel (SCAP) the relevant authority for development of five (5) storeys or more in the Urban Corridor Zone.

No formal referral of such development applications to Council is provided for. A Memorandum of Agreement (MoA) with the Department of Planning Transport and Infrastructure (DPTI) provides for informal referral to Council seeking comments on limited specific matters. Additional local key planning issues can be raised for attention of SCAP.

Through the informal MoA arrangements, Council officers can have a limited opportunity to provide input via the DPTI confidential Pre-Lodgement Panel deliberations. This is a voluntary process, and it is noted on this occasion the applicant has declined to participate. Similarly there has not been any involvement in a voluntary Design Review process facilitated by the Government Architect.

## Discussion

The full assessment of the development is the role of the Department of Planning Transport and Infrastructure (DPTI) officers and the ultimate planning approval judgement the role of the State Commission Assessment Panel (SCAP). It is appreciated Council's role is limited to comments on matters within its direct control and observations in relation to planning assessment matters from a local

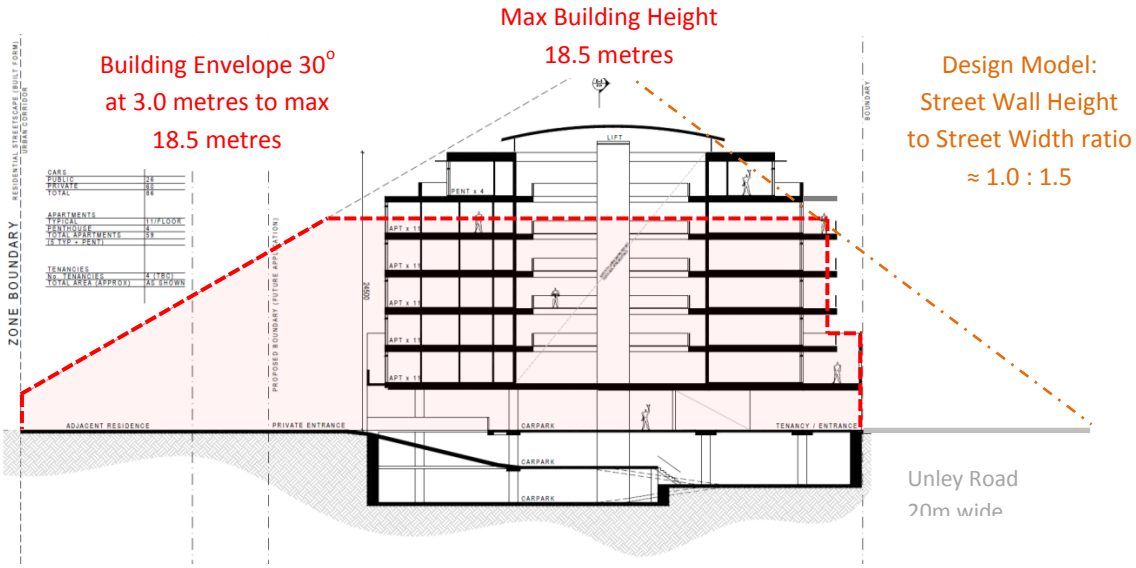
perspective to highlight key issues that may require further analysis / assessment by DPTI officers and SCAP.

***Proposed Development***

In brief, the proposed development encompasses the following key features and concerns:

- Site comprising part of overall land holdings with frontage to 244-246 Unley Road of 42.0 metres and partial depth of 51.0 metres (of overall site of 74.1 metres) including part of 1 Hart Avenue;

- The development site does not include 3 Hart Avenue, and with the remaining portion of 1 Hart Avenue this area will be subject of a future application;
- The proposal on this portion of the site emulates the previous approved development, but does afford less mass with a smaller corner tower and a design that does not intrude into the rear zone interface building envelope;
- Ground floor to comprise 4 tenancies (café / shop / commercial) of 580$^2$;
- Six levels above to comprise 59 apartments (10 x 1 bedroom, 10 x 2 bedrooms small unit of 73m$^2$, 35 x 2 bedrooms units 80-100m$^2$ and 4 x 3 bedrooms 155m$^2$);
- Height to seven (7) storeys (24.5 metres to main roof edge and 26.0 metres to top of central courtyard cover) versus policy of five (5) storeys (18.5 metres). Represents a notable variation over desired height of 32% to 40%. Should remove at least one of lower levels whereby proposed recessed form at 6 storey may be more compatible and warranted;
- The extra height is contained within the zone boundary interface building envelope and recessed above Unley Road street wall to mitigate visible scale but the additional height will still be apparent and dominate adjacent outlooks;
- Above the 1 to 2 storey street wall façade, to Unley Road and Hart Avenue and adjacent site, there are setbacks reflecting the required 3 metres, with only intrusion by balconies and canopies;



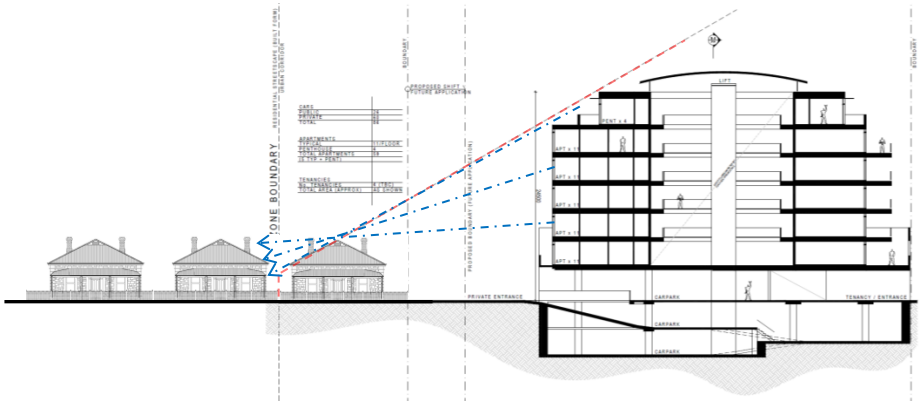

- The Street Wall height to Unley Road and Hart Avenue (desired 18.5 metres) is limited to around 20.0 metres with the top 7th storey further recessed from the edge to reduce dominance in perspective, albeit will still be apparent and dominate from adjacent outlooks and well beyond desired scale and bulk;

- The building emphasises a base podium façade, shop fronts and canopies to street frontages with recessed upper residential levels and open balcony and canopy features to articulate its mass. It is appreciated the treatment is contemporary and simple but more articulation and detailing could be provided to the parapet facades, pediments, individual shop fronts and particularly the canopies enlarged (longer and deeper with coordination with small building setbacks to create positive public spaces) to complement the desired and existing streetscape pattern;
- External materials consist of a mixture of stone, stained grey precast concrete, dark metal cladding / screening, exposed steel beams, tinted and clear glass;
- External landscaping is minimal with trailing vines off balconies – but with no details or evidence of how this is supported or to be sustained – and planter boxes and vines;

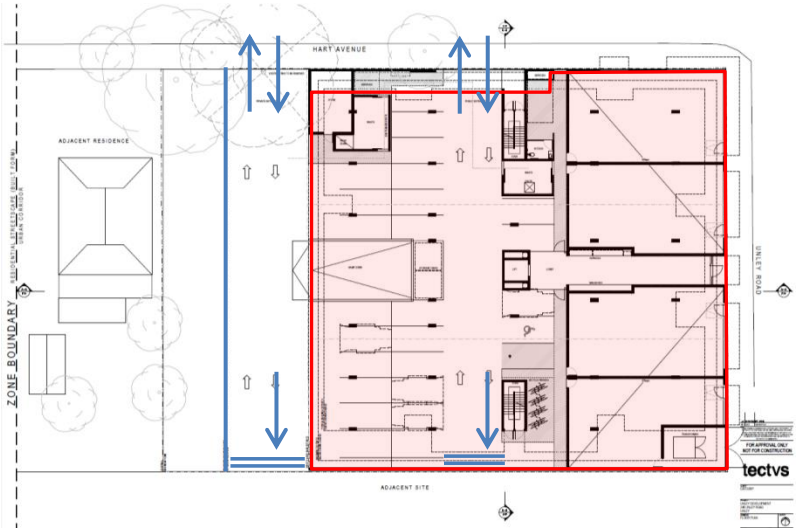
- The apartments enjoy an internal courtyard with planter boxes and trailing vines;
- There are none of the required deep-soil landscape areas and trees. New 3 storey and greater design policy suggests 7% of site area (≈150m$^2$) for medium to large trees (6-12m tall by 4-8m wide) be included per 30 to 60m$^2$ of deep soil zones = 3 large to 5 medium trees;
- An outdoor dining area in Hart Avenue adjacent to Unley Road is proposed. The building plans do not correlate with landscape plans regarding large northern shopfront openings and the road space is insufficient for the proposed facility;
- The proposed western accessway leads to the removal of one of the larger on-site existing trees;
- There are only three small street trees on the southern side of Hart Avenue, and indication of one supplementary opportunity with reconfiguration of street;
- With varied building setbacks and judicious placement of street trees supplementary green and tree canopy could be incorporated on the Unley Road frontage and western end of Hart Avenue (particularly with 2m required setback provided);
- Unreasonable open overlooking of adjacent residential private areas, particularly directly to the west and also obliquely to northwest and southwest, from rear and sides needs to be better addressed, ie by alternative orientation of outlooks, focus on long views, recessed viewing points, avoid reliance on variable effect vines, higher / wider / angled screening (eg obscure glass) to balconies and windows;

***Hart Avenue (north) elevation***

***Rear (west) elevation***



- The existing dwelling at 3 Hart Avenue, or alternative future development along the rear of the site, offers limited screening of downward views from higher levels into adjacent private residential areas;
- At the ground level 0.0 metre road and side boundary setbacks are acceptable, although up to 3.0 metre setbacks can be provided for outdoor dining. There should be a 2.0 metre setback provided from Hart Avenue west of 20.0 metres from Unley Road. This would provide relief to the narrow Hart Avenue and provide an opportunity for ground level landscaping;




- Two accessways (public and private) are provided to Hart Avenue. Preference would be for one shared accessway and convenient consolidated internal parking circulation avoiding dead-end isles. The remaining development site should also utilise the one consolidated accessway to avoid compounding on-street conflicts and issues;
- Internal carparking provided at ground level (25 spaces) and two lower internal levels (60 spaces – some double stacked), including disabled spaces, generally accords with required provisions although design and dimensions need review. However, small segregated public caparking areas compromise convenience and efficiency, and appropriate allocation for tenants, residents and visitors is required to facilitate proper and effective use;
- Required configuration for Hart Avenue and appropriate traffic flow leads to loss of current on-street parking adjacent to site that makes on-site parking more critical;
- Bicycle parking is provided for 8 public visitors in undercroft carpark, 28 racks for employees / occupants in basement carpark plus room in each apartment's storage area to exceed policy requirements;
- Waste vehicle servicing is to occur from Hart Avenue, and involves vehicle stopping in street and reversing into western accessway to service on-site bin storage in undercroft carpark. This is not ideal, but operational management to limit service times should help reduce potential conflict;
- On-site stormwater detention (14,000L) and retention (10,000L) is provided for addressing required peak stormwater outflows and limited on-site reuse;

- Energy efficiency includes passive design, natural light, cross-ventilation, courtyard planting, trailing vines, double glazing and solar collection panels. Landscaping, trees and greening of walls and roof-top gardens is lacking.

Overall, the proposal has a number of variations from fundamental policy parameters. Some are limited variations, individually of moderate significance, but together and the key elements are considerable variations. The proposal is a new application to be determined on its own merit, not on any previous precedence, and the integrity of the policy, resolved after comprehensive community debate, should be better observed.

## Council Issues

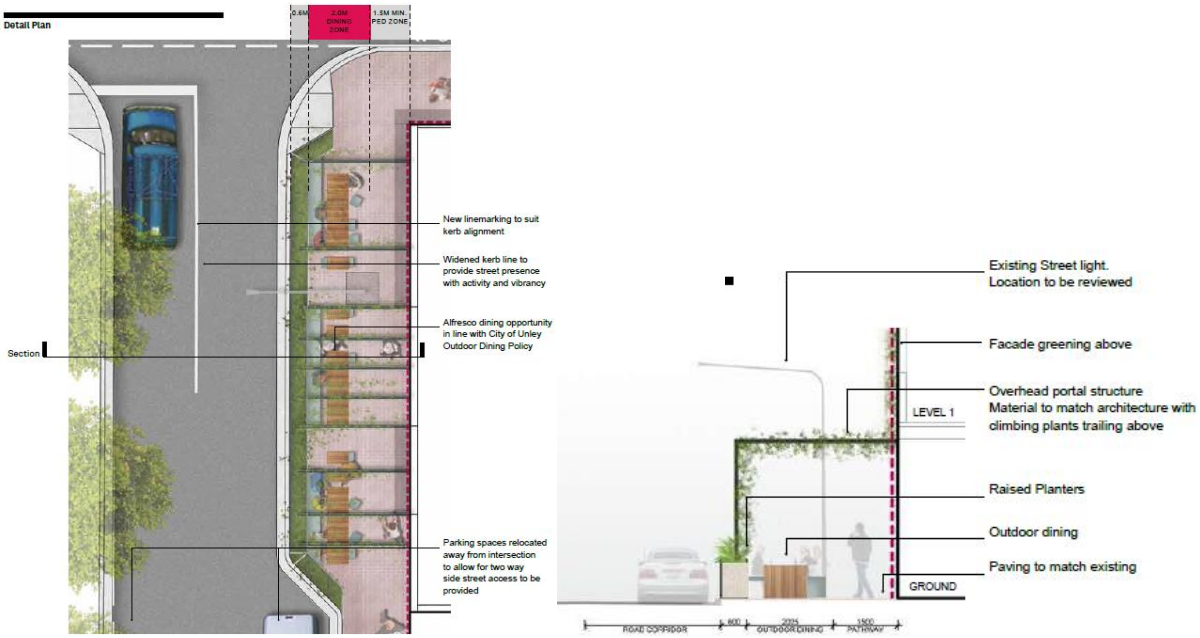
Council is able to provide specific comment in relation to matters where there are direct implications upon local public infrastructure as follows:

- Encroachments – outdoor dining and footpath canopies
- Public realm and street trees
- Vehicle traffic, access, parking and waste servicing
- Stormwater management

### *Encroachments*

Hart Avenue Outdoor Dining Area

The Landscape Concept Plans show a proposed outdoor dining area and reconfiguration of Hart Avenue with large folding door opening to north façade of building. The building plans do not correlate and show these details.




A well designed and landscaped outdoor dining area forms a positive relationship and activation with the public realm. The outdoor area design and dimensions in-it-self meet Council's policy and requirements, although crash barriers need review.

However, the narrowing (to 5.8 metres) of the already narrow (7.4 metres) Hart Avenue roadway and junction with Unley Road is not feasible. The movement and pathways for junction and vehicle traffic, including necessary waste and service vehicles (up to 8.8 metres long), dictates that the current road way width (with current on-street parking removed) is required for adequate and safe performance.

At best, with a proper survey and further analysis, a minor narrowing and reconfiguration may, or may not, be possible. If possible, this could afford an opportunity to move the footpath (minimum 1.5 metres) out to a kerb re-alignment and provide a narrow space along the building frontage in combination with openings in the building wall for outdoor dining opportunities.

To this end it would be beneficial for the design to re-consider including a small building setback (as should be provided in any event for that part 20 metres west of Unley Road) to accommodate a suitable outdoor dining area predominately on the site.

Footpath Canopies and Outdoor Dining Overhead Portal Structure (Pergola)

Narrow 1.5 metre wide cantilever canopies over shop front openings along Unley Road and Hart Avenue are proposed.

The canopies are relatively shallow and should desirably be deepened to at least 1.8 metres (within 0.6 metres of existing kerb), in coordination with small building setbacks to create positive public spaces, and extended beyond just the extent of shopfront windows to afford appropriate pedestrian protection on the footpaths.

The outdoor dining portal structure adds the benefit of northern and overhead posts and beams for growing of beautifying and protective vines to the area and over the footpath.

The encroachments over the public realm are lightweight and non-integral to the main building which enables them to be addressed by Council's standard policy licensing requirements.

Public Realm / Street Trees

There is no indication of impacts upon existing street trees in Hart Avenue, other than pruning for building zero 0.0 metres setback and encroachments. Potentially 1 additional street tree is suggested to the west of the new proposed kerb protuberance.

One larger on-site tree at 1 Hart Avenue is proposed to be removed to make way for the new western accessway. It is unfortunate to loose a mature tree, particularly with minimal replacement on-site landscaping proposed, but it is not regulated (less than 1.5 metre circumference).

At this stage no discussion has occurred on Council requirements and additional opportunities to collaborate and mutually contribute to a public realm upgrade.

Construction will impact upon the area and footpaths surrounding the site. Alternative arrangements will need to be made during construction.

Any damage, additional planting and reinstatement of footpaths etc will be managed and costs recovered via normal Council procedures from the owner/developer.

A Survey Plan is required to confirm the accurate dimensions of the site, buildings, Unley Road and Hart Avenue carriageways, footpaths, street trees etc

***Vehicle traffic, access and parking***

Traffic

All vehicle access/egress into the site is, and will be, from the side street, Hart Avenue. Independent and council traffic assessment and modelling has been undertaken to assess the implications of the proposed development.

Hart Avenue is currently a narrow street and the safe vehicle movement pathways, including for larger waste and service vehicles (max 8.8 metres long) based on more favourable right turn in from Unley Road rather than tighter left turns, indicates there is little opportunity for further narrowing. Right turns may be complicated by future tram arrangements which may further compound design tolerances in Hart Avenue. In fact on-street parking on both sides up to around the western accessway will require banning to facilitate safe movements. However, on this basis the traffic capacity and arrangements for Hart Avenue should be feasible.

There is currently significant on-street parking in this location, likely mainly adjacent business premises staff, and the banning will lead to their relocation. A subsequent comprehensive traffic and parking study will be required to address the appropriate configuration and management within Hart Avenue.

Traffic generation modelling for peak periods indicates the proposed commercial and mainly residential combination will increase daily traffic along Hart Avenue and the surrounding local road network. However, it will be to a limited degree relative to current extensive largely commercial development (41 trips per peak hour versus 44) and primarily focussed towards Unley Road. The traffic at Hart Avenue/Unley Road intersection should perform satisfactorily. Overall a traffic increase will be noticeable but it is envisaged to have a minor impact on traffic performance and efficiency.

The construction of such a large development will be long and complex requiring careful consideration of staging and management of external impacts, notably traffic, parking, pedestrians and environmental emissions. A Construction Management Plan, to the reasonable satisfaction of Council, should be required as part of the approval and before proceeding with the development.

Access

Two accessways (public and private) are provided to Hart Avenue. It would be preferable for one consolidated vehicle accessway, reducing movement points in

street, potential on-street parking loss, reinforcing entry to parking area to public view and the efficiency and convenience of use with proper internal circulation. Further, the remaining western development site should also utilise this accessway and avoid further compounding these issues

The loss of existing additional on-street parking compounds the importance of conveniently available on-site carparking, which is to minimum standards that usually rely on such complementary on-street parking.

The nominated 'private' accessway should not have any entry control or gates, to ensure not only is all queing contained within the site and movement along the footpath or street not impeded, but that the required 19 spaces are available without restrictions to commercial and residential visitors.

A subsequent comprehensive traffic and parking study will be required to address the appropriate configuration and management within Hart Avenue.

Parking

Based on provisions for higher density and mixed use development in the Urban Corridor Zone in Unley (City) Development Plan Table Un/5 and Un/5A the required parking is as follows:

| Land Use | Scale | Rate | Required | Provided |
|---|---|---|---|---|
| **Shop** | 580m$^2$ | Min 3 / 100m$^2$ gla | 17.4 | |
| **Outdoor Dine** | 15m$^2$ | Min 3 / 100m$^2$ gla | 0.45 | |
| **Storage Room** | 30m$^2$ | Min 3 / 100m$^2$ gla | 0.9 | |
| **Commercial Total** | | | 19* | 16* |
| **Residential** | | | | |
| **1 bed**<br>**or < 75m$^2$** | 10<br>10 | 0.75 | 15 | |
| **2 bed or > 75m$^2$** | 35 | 1.25 | 43.4 | |
| **3 bed or > 150m$^2$** | 4 | 1.75 | 7 | |
| **Total** | 59 | | 65 | 60 |
| **Visitor** | 59 | 0.25 | 15* | 9* |
| **Total** | | | 84* | 85* |

* Resident visitor and commercial public parking may be shared given complementary peaks
gla "***gross leasable area*** means ***total floor area*** of a building excluding public or common tenancy areas such as malls, verandahs or public toilets"
"***total floor area*** with respect to a building or other roofed area means the sum of the superficies of horizontal sections thereof made at the level of each floor, inclusive of all roofed areas and of the external walls and of such portions of any party walls as belong to the building"

The required rates in the Development Plan are already substantially discounted in recognition of the urban corridor context, public transport accessibility, nature of apartments, complementary mixed uses and on-street parking. Expectations for additional discounting based on the reasons already accounted for are unwarranted. Further, the Adelaide situation is not comparable to the promoted lower demand Sydney suburban situation.

It has been nominated internal carparking is provided at the ground level in two segregated areas of 16 spaces off a 'public' accessway, with necessary use of a space at the southern end as a turn-around for the dead-end isle, and 9 spaces off second 'private' accessway, comprising a potential total of 25 spaces. These ground level areas pursuant to parking policy may reasonably be shared given the respective complementary peak demands of commercial, retail, café and residential visitors. There are two lower levels for 60 spaces (including 4 double stacked).

The total provision of 85 appears adequate in total compared to required total of 84 spaces. However, respective location, distribution and allocation is critical for effective and convenient use.

A minimum of 19 spaces at the ground level should be maintained for commercial users (including all gross leasable areas including storage) and for sharing by resident visitors. The 'public' eastern accessway provides 16 spaces. The 'private' western accessway serves 9 spaces at the ground level.

The 'public' area is 3 short plus the demand is compounded with the significant loss of on-street parking (8 or more spaces) through traffic movement consequences in Hart Avenue. Most or all of the 9 western spaces should be allocated to address the overall public commercial / visitor requirements and compensate for the significant loss of on-street parking along the sites frontage.

The remaining 60 or so spaces in the lower levels should be allocated to serve the 59 apartment residents needs. The double stacked spaces should only be allocated to the same dwelling.

One disable space is provided at ground level but based on 1 space per 25 spaces there should be a total of 3, ie a further 2 within residents area.

The design dimensions of the internal parking isles, space width, clearances to walls and dead-ends and pedestrian movements to stairs, lifts, walkways and lobby are insufficient to function effectively. Consequently the number of spaces is likely effectively less than nominated. Dimensions and clearances, particularly for ground level visitor higher turn-over areas, should be closely reviewed and reconfigured.

Bicycle parking is provided for 8 public visitors in ground level carpark, 28 racks for employees / occupants in basement carpark plus room in each apartment's storage area. This exceeds policy requirements.

<u>Waste Servicing</u>

The Waste Management Plan proposes adequate capacity but only a minimalist approach to waste management. A range of changes and improvements to the current proposed development design are suggested to meet the identified reference document SA Better Practice Guide for Waste Management for Residential and Mixed use Developments (Zero Waste). A much better outcome in relation to waste management could be achieved and ultimately reduce the amount of material going to land fill and reduce the waste collection traffic movements associated with the development.

This would include such common practices as:

- Allocate 15m$^2$ for hard storage area to address this neglected waste stream;
- Upgrade single chute with diverter to a minimum of two separate chutes to ensure the proper separation of general and recyclable waste streams;
- Incorporate a separate kitchen caddy system for each resident to capture food and organic matter which could then be presented at the central collection point;
- The waste storage and collection room having the ability to compact material within collection bins to maximise capacity and reduce collection frequency;
- Use of larger 1100L bins wherever possible to reduce number of required bin collections from potential 13 to 9 (or less if undertake above);
- Waste collection, storage and chute rooms being consolidated and conveniently located to avoid current separate locations that create conflict with moving bins across the carpark area and accessways.

Waste vehicle servicing is to occur from Hart Avenue, and involves the vehicle stopping in the street and reversing into western accessway to service on-site bin storage in the ground level carpark. This is not ideal, but tolerable with operational management to limit service times, eg limit service times to 7.00am to 7.00pm Monday to Saturday but excluding peak traffic times of 7.00-9.00am and 3.00-6.00pm Monday to Friday. Further, bin capacity should be maximised to reduce the number of required collections.

While not guaranteed, if there is cooperation with future development to the south the accessway may be able to extend to Opey Avenue, which may provide drive-through circulation and avoid the need for reversing in the street.

***Stormwater Management***

The existing development has 97% impervious (3% pervious) whilst the proposed development is 99% impervious (1% pervious) site coverage.

A marginal difference but council requirements have been noted to re-use stormwater run-off on-site via provision of a retention tank (10,000L) to service landscape irrigation – the reuse of retained water could be increased by additional landscaping and use in toilets and hot water etc.

The desired maximum runoff flow rate for commercial development is the equivalent of 80% impervious (20% pervious). A detention tank (14,000L) is proposed with throttled discharge to appropriately reduce the peak storm flow to the required rate.

The outflow is proposed through 5 outlets of 8 litres per second to Unley Road and Hart Avenue to address 1:10 year ARI events. Outflow outlets should desirably be kept below 4 to 5 l/s which means 8 outlets is required. These should be distributed equi-distant and as generously separated as possible along both the Unley Road

and Hart Avenue street frontages. The closest stormwater main is across Unley Road making a direct connection impractical.

Water quality issues are limited. Stormwater is mostly roof run-off, with gross pollutants able to be settled out through the tanks. The driveway and paved surfaces could lead to more pollutants but these are to be treated via grated sump traps.

**Planning Consent Conditions**

In the event approval is contemplated there are various issues that have been identified where planning conditions are warranted, as follows:

- Caparking design and dimensions be reviewed to improve convenient and efficient on-site circulation, space useability and conformity with AS2890;
- Car parking on-site be allocated to ensure a minimum of 19 spaces at ground level are available without any gates or other restrictions for commercial and residential visitors and 65 spaces are available for residents, with any double stacked spaces allocated to the same dwelling;
- Overlooking of adjacent and more remote private habitable areas, provided by the range of lower to higher building levels, towards the south west through to the north west be minimised by further design and mitigation techniques to external window and balcony placement, orientation, vertical and horizontal screening;
- Waste and servicing vehicles be a maximum length of 8.8 metres and enter from, and exit to, Unley Road and via a right turn in to Hart Avenue to ensure the most effective turn path geometry and least impacts;
- Waste and service vehicles only visit the site between 7:00am to 7:00pm Monday to Saturday, excluding public holidays and peak traffic periods between 7:00 to 9:00am and 4:00 to 6:00pm Monday to Friday;
- The Waste Management Plan recommended changes and improvements to the current proposed development design in accord with the SA Better Practice Guide for Waste Management for Residential and Mixed use Developments (Zero Waste) be incorporated; waste storage and collection rooms being consolidated; compactor included to maximise storage and use of larger 1100L bins wherever possible to reduce the number of required collections per week to 9 or less;
- Public realm configuration, alterations and damage in relation to footpaths, verges, encroachments, outdoor dining, crash protection, street trees etc are to be resolved with, and approved by, the Council at the expense of the owner/applicant;
- Stormwater management on-site be in accord with the submitted details other-than the outlets to the street being limited to 4 to 5 litres per second each and a maximum of 8 outlets that should be distributed equi-distant and as generously separated as possible along both the Unley Road and Hart Avenue street frontages to the satisfaction of council;

- A Construction Management Plan be resolved with Council to guide the requirements and operations during construction to avoid traffic, parking, pedestrian and amenity issues.
- It is requested a Note be added indicating pursuant to the policy of the City of Unley On-street Parking Exemption permits are not issued for occupants of new development (post 2013).

**Public Consultation**

Development located on 'adjacent land' (adjoining or within 60 metres directly across a street) to a residential zone and three (3) or more storeys in height is subject to Category 2 public notification.

DPTI have initially determined the Public Notification status as Category 1 (no notice). This is because the subject development site is not considered to directly affect 'adjacent land' within the residential zone, ie adjoins 3 Hart Avenue and directly faces 2 Hart Avenue which are within the Urban Corridor Zone.

This has been challenged as the interpretation and typical practice adopted by Council's Development Management suggests it is Category 2 (direct advice but no appeal rights). This is because there are dwellings on 'adjacent land' within the Residential Zone when the radius of 60 metres is applied to the west across Hart Avenue, ie Numbers 6, 8 and 10 Hart Avenue.

Category 2 notice involves advice and the opportunity to make representations within 10 business days to owners of directly adjacent land (adjoining properties or across a road within 60 metres). No advice or obligation to hear other representors is afforded. No third party appeal rights exist.

The public notification categorisation is being reconsidered by DPTI and advice is being awaited on a final determination.

If the application becomes Category 2 the requisite public notification process will be a separate matter. It will allow neighbours to make their own comments.

Because of Council's inability to materially influence the outcome of this application, it is not the relevant planning authority and without control of the application, it is not appropriate for Council to conduct engagement or publically release any information. Any questions or information sought by residents needs to be referred to DPTI, CBD & Inner Metro Team, Strategic Development Assessment.

**Conclusion**

The development proposal is of great interest to Unley residents, particularly those in close proximity to the site.

The Council is not the assessing authority, and only an informal referral agency able to make comments. It is therefore appropriate that Council concentrate on the

specific areas of direct control while raising its concerns regarding the most significant divergences from the planning policy parameters.

The nature of the large scale mixed use development accords with the Urban Corridor Zone policy. However the highlighted areas of concern with planning design and council infrastructure matters should be addressed as part of the expected comprehensive assessment by SCAP.

**Enquiries**

If there are any queries or need for further explanation or information please contact David Brown, Principal Policy Planner, dbrown@unley.sa.gov.au or 8372 5185.

Yours sincerely

**Peter Tsokas**
CHIEF EXECUTIVE OFFICER

State Commission Assessment Panel
G.P.O. Box 1815,
ADELAIDE SA 5001

Dear Sir,

I advise that this Agency has **the attached/~~no~~ report** to make on the proposed development described below.

Reporting Officer - DAVID BROWN - PRINCIPAL POLICY PLANNER

9/10/2017
Date

(Received 28/8/2017)

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| | |
|---|---|
| Council | CITY OF UNLEY |
| Application Number | 090/M008/17 (APPIAN ID 2397) |
| Type | MERIT |
| Applicant | CATCORP PTY LTD |
| Locality | 244-246 UNLEY ROAD, UNLEY |
| Hundred | ADELAIDE |
| Planner | KARL WOEHLE |

STATE COMMISSION ASSESSMENT PANEL
A COMMITTEE OF THE STATE PLANNING COMMISSION
GPO Box 1815, Adelaide SA 5001
Ph: 7109 7060

*Reference* *11833486*
*Contact Officer* *Karl Woehle*
*Telephone* *71097169*

23 August 2017

Dear Sir/Madam

# INFORMAL REFERRAL

The Development Assessment Commission has received the development application described below (all relevant documentation is attached). The Commission is seeking comment from your Council to assist it in reaching a decision and would appreciate a response within **6 weeks** of receipt of this correspondence. Should no report be received by the Commission within that period the Commission will deem that you have no comments to make on the proposal.

Council's comments will not include a full planning assessment of the application, but may include comments on any local strategic issue, policies or plans. This may include comments on proposed policy amendments, planned public realm improvements, traffic management, waste services, encroachments, local heritage issues or the like for consideration by DAC. Council may also make brief observations in relation to planning assessment matters from a local perspective to highlight key issues that may require further analysis / assessment by DAC assessing officers.

Your co-operation in using the attached form when replying would be appreciated.

Yours faithfully,

For **DEVELOPMENT ASSESSMENT COMMISSION**

| | |
|---|---|
| Council | CITY OF UNLEY |
| Application Number | 090/M008/17 (APPIAN ID 2397) |
| Type | MERIT |
| Applicant | CATCORP PTY LTD |
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| Hundred | ADELAIDE |
| Planner | KARL WOEHLE |

12 January 2018

The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

***Attention: Karl Woehle***
Planning Officer
CBD & Inner Metro Team
Strategic Development Assessment
Planning and Development
Department of Planning, Transport and Infrastructure

Dear Sir/Madam

**INFORMAL REFERRAL - FURTHER COMMENTS ON AMENDMENTS**
**DA 090/M008/17 (APPIAN ID 2397) - 244-246 UNLEY ROAD UNLEY**

Thank you for the opportunity to further review the applicants response to the public consultation, agency advice and informal council referral comments (9 October 2017) on the above-mentioned application to assist the assessment process.

The information forwarded on the 18 December 2017 to the contact officer was not able to be reviewed until after the 8 January 2018 upon their return from leave leading to the delay in this response.

Council wishes to provide further comment on key matters not addressed as part of the applicant's response and re-design that require greater consideration and assessment.

Concerns remain with the degree of variation from key planning policy parameters and impacts upon local road public realm and infrastructure of the proposed development at 244-246 Unley Road, Unley, that require further consideration as part of the assessment process, including:

- Building height to 7 storeys (24.5 metres) versus policy of 5 storeys (18.5 metres) represents a substantial variation (more than 30%) over derived policy height, desired corridor urban design and scale, expectations resolved with community through policy amendment process and visual dominance from adjacent outlooks;


Civic Centre 181 Unley Road
Unley, South Australia 5061
Postal PO Box 1
Unley, South Australia 5061
Telephone (08) 8372 5111
Facsimile (08) 8271 4886
Email pobox1@unley.sa.gov.au
Website www.unley.sa.gov.au

- Unley Road context framed on maximum of 5 storeys with intended intensification and rise in scale within District Centre to 5 to 7 storey in dominant southern half (7 to 9 storey only in portion north of Arthur Street);
- Building setback at ground level of 2 metres from Hart Avenue (from 20 metres from Unley Road alignment) is not provided whereby there could be relief and articulation to building mass in streetscape and further site landscaping opportunities;
- Public Realm disruption by virtue of building intensity, lack of relief and servicing needs (waste trucks) leading to a major loss of on-street parking potential, compounded by current high demand and inadequate proposed on-site parking, and impact and potential for street trees. A comprehensive traffic and parking study will be required to address the appropriate configuration and management within Hart Avenue;
- Outdoor dining only indicated as notional vision (but overhead portal encroachment in Hart Avenue still included on elevations – any encroachment needs to be excluded from planning approval) but as previously outlined there will be severe limitations to ability for encroachment given narrow road width, vehicle movement requirements and essential design parameters for road reserve;
- Overlooking, within development but particularly to adjoining low density high amenity residential areas, requires minimisation by effective design, interruption and screening, not only just distance (30 metres) which is effective in 2 storey scenarios but not from higher viewing aspects, ie 3 to 5 or 7 storeys;
- On-site parking provision, allocation, design and dimensions not fully addressed. The intensity of development is excessive and has been increased by 80m$^2$ of additional shop floor space (610 to 690m$^2$ – albeit from scaling plans appears applicable 'gross leasable' or 'total floor area' may be more like 710m$^2$) while the available ground level visitor parking has been reduced (25 to 18 spaces – assume claimed 19$^{th}$ space is in south east corner but this is required as turn-around space for dead-end isle) to create a shortfall of 3 visitor spaces per already favourable discounted mixed use standards (further discounting is unwarranted).
  The provision will not take account of extra demand from a potential outdoor dining area.
  While in accord with standards, it is noted 3 dwellings will have no on-site parking (52 individual spaces and 4 double stacked spaces provides access for 56 dwellings out of the 59 proposed).
  Any on-site shortfall is significant and compounds the problems with inadequate and major loss of potential on-street parking. Development intensity (shop floor area and building scale) should be reduced accordingly;
- Site landscaping and environmental sustainability is lacking, with required 7% for deep soil zone and medium to large trees not addressed within design, creating a harsh and hot local amenity.

Council has delegated to the Chief Executive Officer or his nominee(s) the authority to negotiate appropriate outcomes in regard to street trees, future public realm upgrades, canopy encroachments and outdoor dining arrangements should the application be approved and these matters pursued.

Any approval should include a range of reinforcing conditions, including:

- Caparking design and dimensions be reviewed to improve convenient and efficient on-site circulation, space useability and conformity with AS2890;
- Ground level on-site car parking not be allocated in any way, be well signed and remain freely available for visitors at all times;
- Overlooking minimisation to adjacent low-density residential properties be improved by a range of mitigation techniques;
- Waste and service vehicles (maximum 8.8 metres length) only visit the site between 7:00am to 7:00pm Monday to Saturday, excluding public holidays and peak traffic periods of 7:00 to 9:00am and 4:00 to 6:00pm Monday to Friday;
- Waste Management to accord with the SA Better Practice Guide for Waste Management for Residential and Mixed use Developments (Zero Waste) and larger 1100 litre bins be used to reduce the number of required collections;
- Public realm re-configuration and damage be resolved with, and approved by, the Council at the expense of the owner/applicant;
- Stormwater management on-site accord with submitted details with a maximum of 8 outlets distributed equi-distant along Unley Road and Hart Avenue frontages;
- A Construction Management Plan be resolved to guide the requirements and operations during construction to address traffic, parking, pedestrian and amenity issues.

In addition it should be added as a note that pursuant to Council's policy it will not grant 'On-street Parking Exemptions' from parking time limits to any new residential premises.

The nature of the large scale mixed use development generally accords with the Urban Corridor Zone intent. However, the highlighted areas of concern with planning design and council infrastructure matters should be addressed as part of the expected comprehensive assessment by State Commission Assessment Panel.

If there are any queries or need for further explanation or information please contact David Brown, Principal Policy Planner, dbrown@unley.sa.gov.au or 8372 5185.

Yours sincerely

**Peter Tsokas**
CHIEF EXECUTIVE OFFICER

STATE COMMISSION ASSESSMENT PANEL

A COMMITTEE OF THE STATE PLANNING COMMISSION

State Commission Assessment Panel

Level 5
50 Flinders Street
Adelaide SA 5000

GPO Box 1815
Adelaide SA 5001

08 7109 7061

20 October 2017

4 Hart Avenue Pty Ltd – C/ JSA Management Pty Ltd
Level 1 86 Pirie Street
ADELAIDE SA 5000

Dear Sir/ Madam

| | |
|---|---|
| **Application Number:** | **090/M008/17** |
| **Applicant:** | **Catcorp Pty Ltd C/- Future Urban Group** |
| **Proposed Development:** | **Mixed use building comprising of commercial/retail tenancy, residential apartments, carparking, landscaping and associated site works** |
| **Subject Land:** | **244 – 246 Unley Road, Unley** |

As an adjoining owner/person potentially affected by the above development application, you are invited to view details of the application and make comment.

The application may be examined between 26 October 2017 and 8 November 2017 during normal business hours at the office of the State Commission Assessment Panel (SCAP), Level 5, 50 Flinders Street, Adelaide and at the office of the City of Unley.

The application documentation will also be available on the SCAP website (http://www.saplanningcommission.sa.gov.au/scap/public notices) during the notification period.

If you wish to comment on the application please complete the attached form. This must reach the Secretary, State Commission Assessment Panel, GPO BOX 1815, Adelaide SA 5001 by no later than **Close of Business 8 November 2017.**

You may be given an opportunity to appear before the SCAP to further explain your views. You will be contacted should a hearing be arranged.

If you have any questions relating to this matter I can be contacted by telephone on 7109 7169 or via email karl.woehle@sa.gov.au

Yours sincerely

**Karl Woehle**
**Planning Officer**
*On behalf of*
**STATE COMMISSION ASSESSMENT PANEL**

**SOUTH AUSTRALIAN DEVELOPMENT ACT, 1993**
**REPRESENTATION ON APPLICATION – CATEGORY 2**

| | |
|---|---|
| **Applicant:** | Catcorp Pty Ltd C/- Future Urban Group |
| **Development Number:** | 090/M008/17 |
| **Nature of Development:** | Mixed use building comprising of commercial/retail tenancy, residential apartments, carparking, landscaping and associated site works |
| **Type of development:** | Merit |
| **Zone / Policy Area:** | High Street Policy Area 20 in the Urban Corridor Zone |
| **Subject Land:** | 244 – 246 Unley Road, Unley |
| **Contact Officer:** | Karl Woehle |
| **Phone Number:** | 7109 7169 |
| **Close Date:** | 8 November 2017 |

My name: Jonsen Tan

My phone number: 0433 345 886

PRIMARY METHOD(s) OF CONTACT: Email address: jonsen.mven@gmail.com

Postal address: _____

_____ Postcode _____

**You may be contacted via your nominated PRIMARY METHOD(s) OF CONTACT if you indicate below that you wish to be heard in support of your submission.**

My interests are:

- [x] owner of local property
- [ ] occupier of local property
- [ ] a representative of a company/other organisation affected by the proposal
- [ ] a private citizen

The address of the property affected is 4 Hart Avenue, Unley Postcode 5061

The specific aspects of the application to which I make comment on are:

Please see attach letter.

**Should the State Commission Assessment Panel conduct a public hearing for this Development Application:**

I

- [ ] **wish to be heard in support of my submission**
- [x] **do not wish to be heard in support of my submission**

**(Please tick one)**

By

- [ ] **appearing personally**
- [ ] **being represented by the following person:**

**(Please tick one)**

Date 7/11/17 Signature _____

**Return Address: The Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide SA 5001 or scapadmin@sa.gov.au.**

Attn: Karl Woehle
Via The Secretary
State Commission Assessment Panel
GPO BOX 1815
Adelaide SA 5001

To Karl,

**RE. CATEGORY 2 REPRESENTATION FOR DEVELOPMENT APPLICATION 090/M008/17 AT 244-246 UNLEY ROAD, UNLEY.**

As owner of the land at 4 Hart Avenue, we write to the State Commission Assessment Panel to express our full support for the proposed development at 244-246 Unley Road, Unley (Development Application 090/M008/17).

As the development site is within close proximity to public transport, local services and areas of public open space, we believe it is deserving of the height and scale proposed. We support the external design of the building as it respects the existing scale of Unley Road and does not unreasonably impact adjacent properties, whilst also seeking to achieve the greater housing mix and densities envisaged for the location. In addition, we believe and hope the development will inspire further revitalisation and investment along Unley Road to assist in activating the roadway.

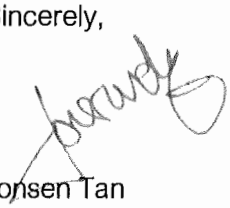
The extensive hanging landscaping in the atrium area will be a point of difference for this building. We believe future residents will find this exclusive feature very appealing and they will be proud to be associated with this unique feature.

In addition to the above, we also support the following aspects of the proposal:

- The continued use of commercial tenancies fronting Unley Road.
- The quality apartment offerings, allowing flexible floor plans with additional rooms for uses other than bedrooms.
- The provision of more than adequate storage, private open space, natural ventilation, natural sunlight and energy efficient initiatives (achieving a 7 Star average NatHER rating).
- Provision of at least one car parking space to each dwelling.
- Provision of shared visitor and commercial car parking.
- Provision of ample bicycle parking.

We urge the SCAP to approve the proposed development as we believe that the benefits the building will bring to the Unley community clearly outweigh any short term inconveniences.

Sincerely,



Jonsen Tan

Philip Goodyer
2 Hart Ave Unley SA 5061
8th November 2017

The Secretary
State Commission Assessment Panel
GPO Box 1815
ADELAIDE SA 5001

Email Address: scapadmin@sa.gov.au

**Development Number 090/M008/17, 244 – 246 Unley Road, Unley**

For the Attention of Karl Woehle

Dear Sir,

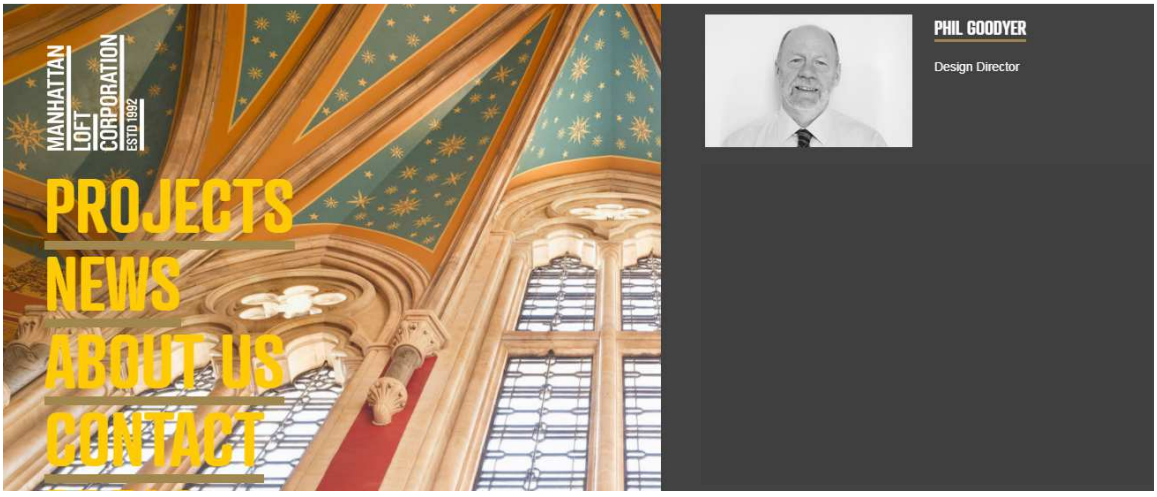
My name is Philip Goodyer of 2 Hart Ave Unley, phone 0417 823 297. I do not wish to be heard in support of this submission.

I am a local property owner and resident. The address of the property affected is 2 Hart Ave Unley.

I write in support of the application, with **one very negative observation** regarding the design quality of proposal at ground floor level, the streetscape impact to Hart Ave and the lack of landscaping.

**Qualifications**

I am a registered Architect in South Australia and, although resident in Unley for over 35 years, I am the Design Director for Manhattan Loft Corporation, a major residential and mixed use developed in London, UK.




Further details may be found at the company website: manhattanloftcorporation.co.uk

I currently work 3 weeks in Adelaide - 3 weeks in London on an alternating basis.

For the last 5 years I have been responsible for the design of Manhattan Loft Gardens, a 42 storey development incorporating 248 apartments and a 7 storey hotel.

Further details may be found on the project website manhattanloftgardens.co.uk.

**Submission**

I support the 246 Unley Road Development Application overall, including the scale of the development and the design quality above street level. However the design at street level is **poor** and **not in accordance** with the Development Plan, particularly the Development Plan Amendment "Inner and Middle Metropolitan Corridor (Design) Development Plan Amendment" with Date of Operation of 30th May 2017.

**Analysis**

It is disappointing, and surprising, that the Urban Context analysis included in the Application makes no reference to 2 Hart Ave, the only private residential property directly adjacent to the proposed development.

## Urban Context

Site Conditions

**246 Unley Road**

The site proposal fronts two key streets of variable built and urban character: Unley Road on it's Eastern side and Opey Street on its Northern.

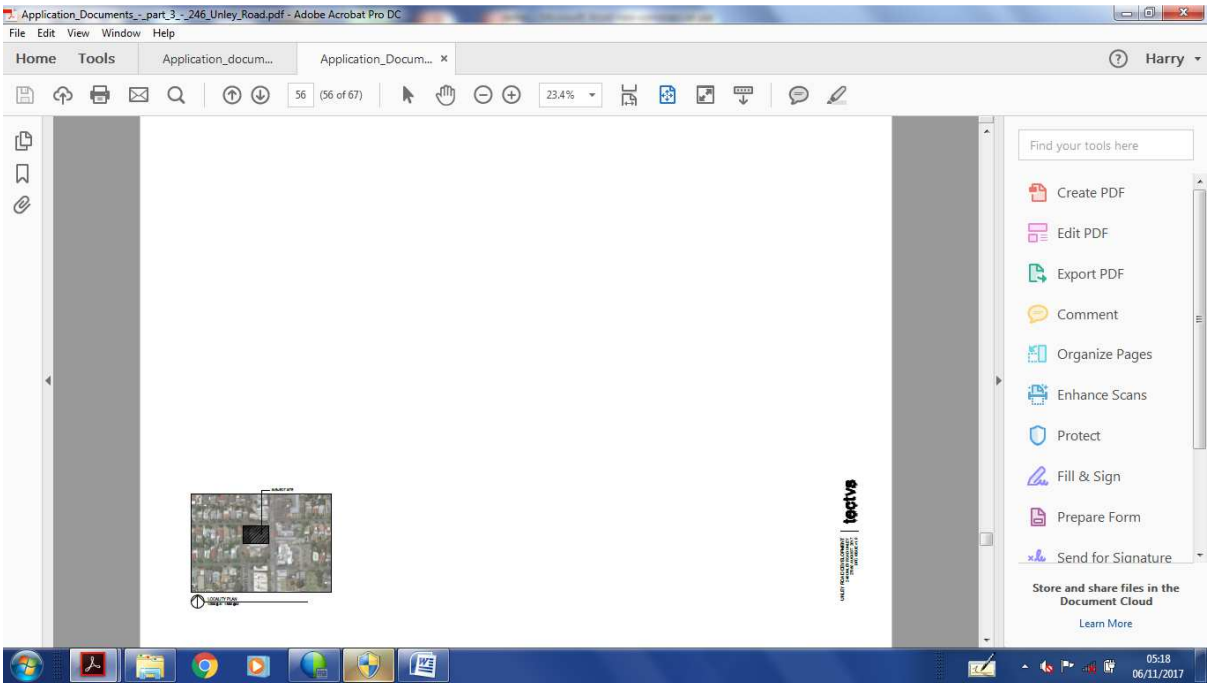
2 Hart Ave, shown below, is directly adjacent the proposed development and is not considered in the Urban Context analysis.

In fact, the analysis incorrectly refers to "Opey Street" to the north.

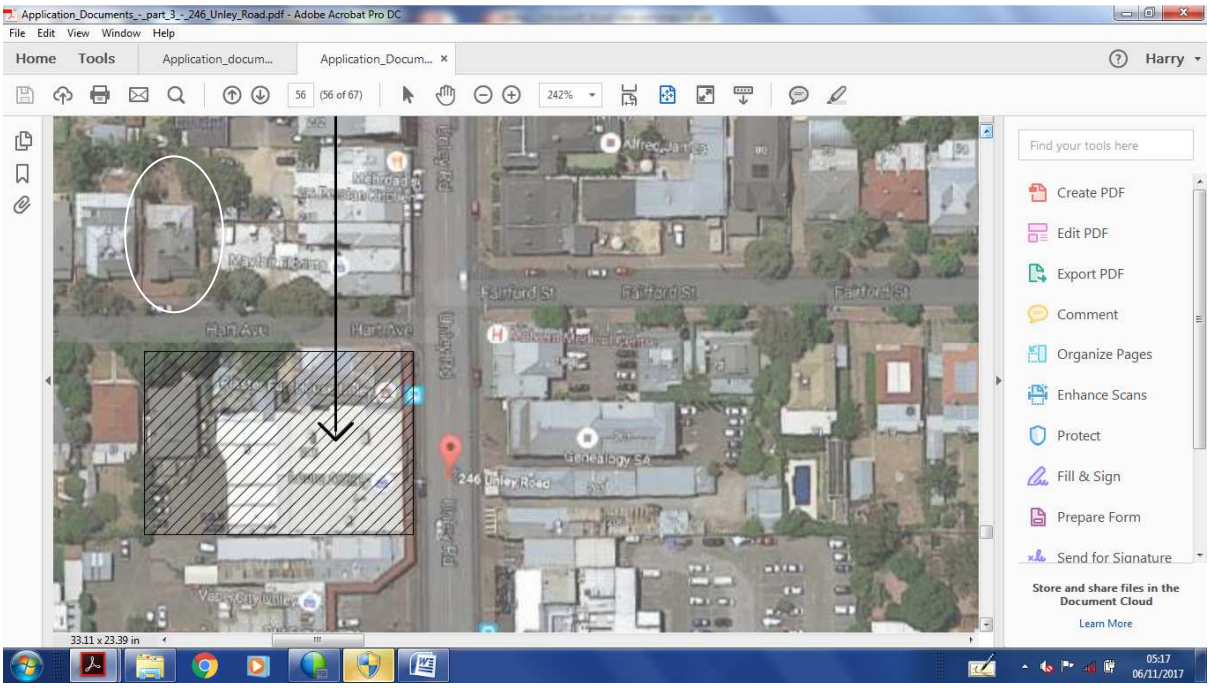
**246 Unley Road**

The site proposal fronts two key ~~streets of variable built~~ and urban character: Unley Road on it's Eastern side and Opey Street on its Northern.

The only drawing indicating the relationship of the proposed development to the adjacent residence at 2 Hart Ave is a postage stamp sized aerial view on page 56 of Part 3:




I have blown this up below with 2 Hart Ave circled.




and a google earth image on page 17 of the introduction.

It should be noted that the properties to the north of Hart Ave within the Urban Corridor Zone are in approximately 13 ownerships and as such the existing urban scale and uses are likely to remain for a considerable time.

Unfortunately, I believe this paucity of analysis contributes to the poor quality of the street level design of the proposal.

**The proposed street level design on Hart Ave**

The ground floor of the Development Application proposal facing the residential area of Hart Ave consists of:

- a 2-way cross vehicle cross over
- a further 2-way vehicle cross over
- a bin store and bin wash area
- "services" zones
- the blank rear elevation of a "store"
- views to carparking

and

- vacant land to the west with no identified use.

The more western of the cross-overs is noted as the "open air bin removal area" (and hence open air rubbish truck area) and appears to be the only location provided for retail loading and unloading.

The vacant land appears to be arranged for casual carparking. It cannot be acceptable that no use is proposed for this part of the Application site.

Further east on Hart Ave there is the side of one retail unit and an "outdoor seating area".

The outdoor seating area shown on the plans (apart from being on public land and only achievable with the loss of significant parking and loading areas on both sides of Hart Ave) appears to not be a commitment by the developer and in fact "subject to further consultations with the City of Unley Council for their ultimate approval as these changes affect the public realm." I believe it is highly unlikely this seating area will be approved by Unley Council and its contribution to the Application should therefore be ignored.

No landscaping is proposed in the Application on Hart Ave at street level.

**Requirements of Development Plan Amendment "Inner and Middle Metropolitan Corridor (Design) Development Plan Amendment" with Date of Operation of 30th May 2017.**

The recent Development Plan Amendment places greater emphasis on urban context (existing) and high quality landscape:

**ATTACHMENT C**

## Medium and High Rise Development (3 or More Storeys)

### OBJECTIVES

# Medium and high rise development that provides housing choice and employment opportunities.

# Residential development that provides a high standard of amenity and adaptability for a variety of accommodation and living needs.

# Development that is contextual and responds to its surroundings, having regard to adjacent built form and character of the locality and the Desired Character for the Zone and Policy Area.

# Development that integrates built form within high quality landscapes to optimize amenity, security and personal safety for occupants and visitors.

### Design and Appearance

# Buildings should be designed to respond to key features of the prevailing local context within the same zone as the development. This may be achieved through design features such as vertical rhythm, proportions, composition, material use, parapet or balcony height, and use of solid and glass.

together with greater emphasis on street level interest and activity:

# Development that enhances the public environment, provides activity and interest at street level and a high quality experience for residents, workers and visitors by:

(a) enlivening building edges

(b) creating attractive, welcoming, safe and vibrant spaces

(c) improving public safety through passive surveillance

(d) creating interesting and lively pedestrian environments

(e) integrating public art into the development where it fronts the street and public spaces

(f) incorporating generous areas of high quality fit for purpose landscaping.

I have highlighted above the elements of this clause which the Application **fails** to provide.

This is a **significant departure** from the requirements of the Development Plan.

The Amendment continues with greater detail on the requirements for Street Interface, and again the proposal fails to meet these requirements (as highlighted) on Hart Avenue:

**Street Interface**

# Development facing the street should be designed to provide attractive, high quality and pedestrian friendly street frontage(s) by:

(a) incorporating active uses such as shops or offices, prominent entry areas for multi-storey buildings (where it is a common entry), habitable rooms of dwellings, and areas of communal public realm with public art or the like where consistent with the Zone and / or Policy Area provisions

(b) providing a well landscaped area that contains a deep soil zone space for a medium to large tree in front of the building (except in a High Street Policy Area or other similar location where a continuous ground floor façade aligned with the front property boundary is desired). One way of achieving this is to provide a 4 metre x 4 metre deep soil zone area in front of the building

(c) designing building façades that are well articulated by creating contrasts between solid elements (such as walls) and voids (for example windows, doors and balcony openings)

(d) positioning services, plant and mechanical equipment (such as substations, transformers, pumprooms and hydrant boosters, car park ventilation) in discreet locations, screened or integrated with the façade

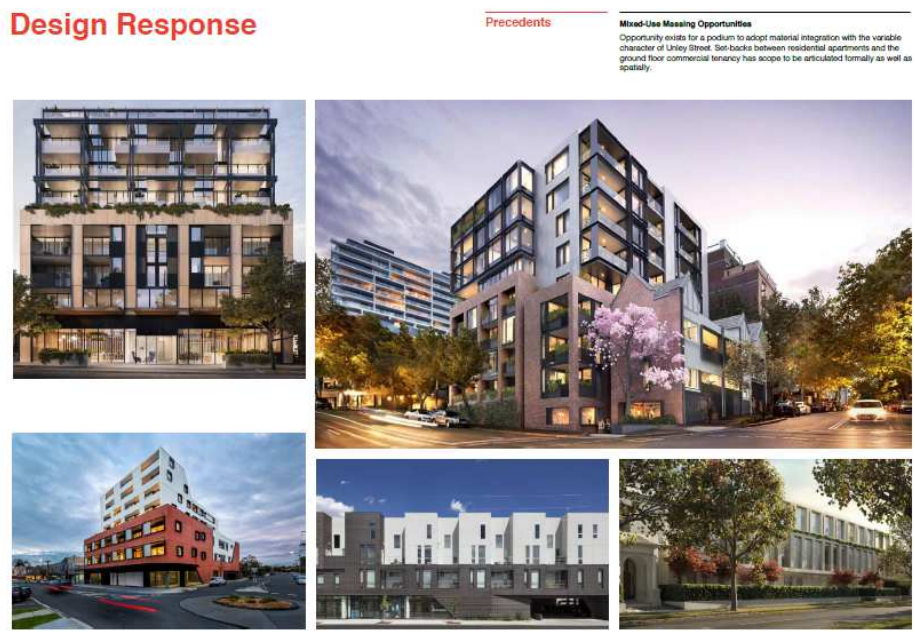
(e) ensuring ground, semi-basement and above ground parking does not detract from the streetscape

(f) minimising the number and width of driveways and entrances to car parking areas to reduce the visual dominance of vehicle access points and impacts on pedestrian areas.

There are many other aspects of the street level design which are poor, for example

- A complete lack of landscaping at ground floor level on Unley Road.
- No boulevard planting on Unley Road.
- Limited verandahs on Unley Road.
- Limited shelter for bus stop

Ironically the precedents for "Massing Opportunities" provided in the Design Response section in the Application document are not carried through to the design:



other than the bottom left image, which provides a particularly poor street level environment and interface with the adjacent zone:

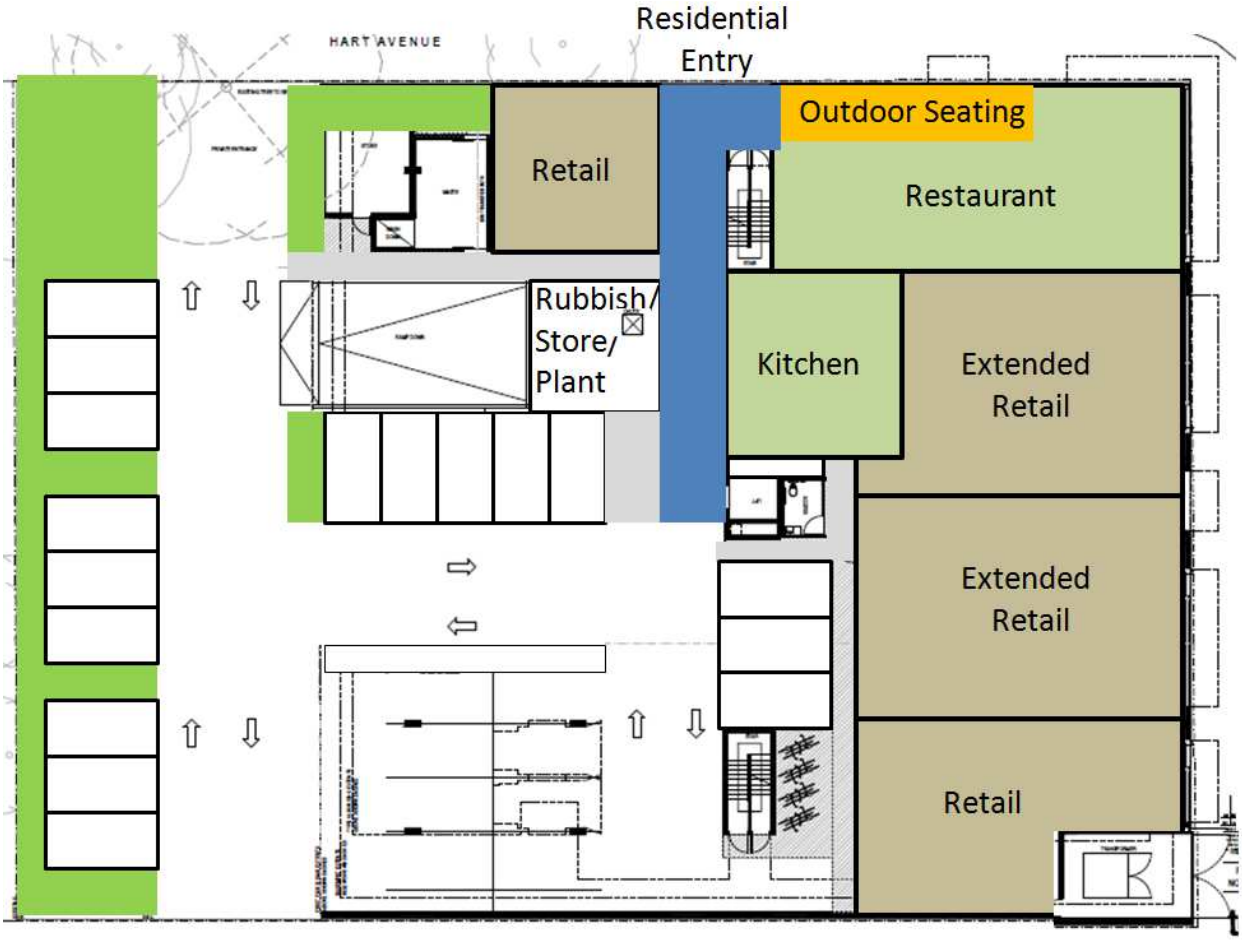
I can only think the above may have been included as an example of designs to be avoided!

**Alternative Proposal**

An acceptable proposal would:

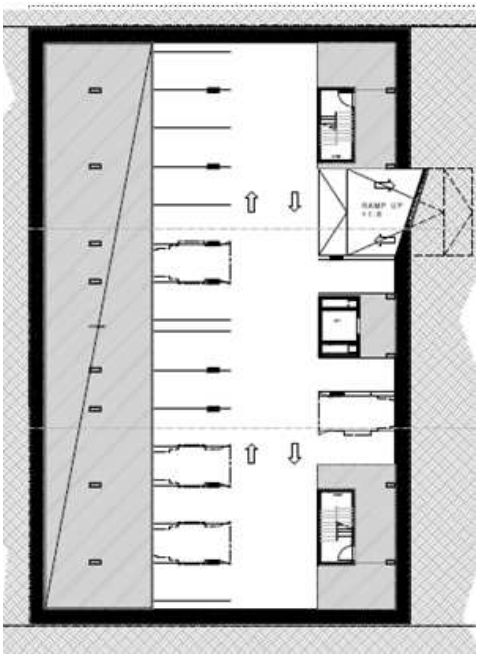
- animate the street frontage to Hart Ave
- provide landscaping
- provide outdoor seating (if this is desired) within the application boundary
- minimise crossovers
- conceal or screen ground level parking
- move rubbish removal further into the site
- provided dedicated delivery parking

Purely to illustrate these proposal one way in which this could be achieved with no loss of carparking is shown below.

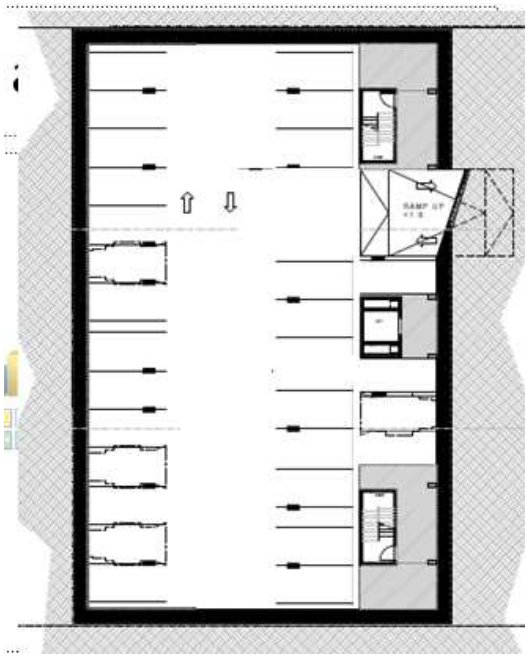



Of course there are many ways in this the requirements of the Development Plan at street level could be achieved and this is only one example.

If an alternative use for the land on the west side of the Application is envisaged additional parking could be provided at basement level with no change to the retaining wall locations shown on the plans:



Current basement



Alternative layout with additional parking

**Conclusion**

The Development Application fails to meet the requirements of the Development Plan in respect of public environment, street interface and landscaping.

Yours Sincerely,

P R Goodyer

Philip Goodyer

Attn: Karl Woehle
Via The Secretary
State Commission Assessment Panel
GPO BOX 1815
Adelaide SA 5001

Dear Karl,

**CATEGORY 2 REPRESENTATION FOR DEVELOPMENT APPLICATION 090/M008/17**
**AT 244-246 UNLEY ROAD, UNLEY.**

I write as the owner of the Cremorne Hotel at 207 Unley Road, Unley which is located opposite the development proposed at 244-246 Unley Road, Unley (Development Application 090/M008/17).

The purpose of this representation is to convey my full support to the State Commission Assessment Panel. I am encouraged by the significant investment made which will support Unley Road businesses.

Whilst the proposed height exceeds 5 storeys, it is a significant improvement on the previously approved design. The design represents design excellence and will not present any negative impacts upon the character or amenity of the locality.

As the development site is located within close proximity to public transport, local services and areas of public open space I believe the overall height and scale is warranted. The height will sit comfortably in the street while the base of the building will respect the existing lower scale.

The housing mix, additional population and business the development will bring to Unley is supported and will only inspire other property owners, including myself, to positively contribute to further investment along Unley Road.

The overall design of the building, including the interesting internal landscaped space and the sensitive approach to Hart Avenue is commended. Currently redeveloping the Bath Hotel, I appreciate the need to create a point of difference and I believe future residents will find this exclusive feature very appealing.

In addition to the above, I also support:

- The active Unley Road frontage;
- The flexibility offered in apartment floor plans particularly the provision of the additional room that could be used for a range of uses that will appeal to purchasers;
- The storage and private open space allocation;
- The achievement of 7 Star average NatHER rating;
- Provision of car parking that exceeds the Development Plan requirements including shared visitor and commercial car parking and adequate bicycle parking.

Overall, I am very excited by this development. As key land owner and business along Unley Road, the development will only bring positive benefits to the community, businesses and other property owners that are contemplating development in the future.

The SCAP needs to support this type of development to rejuvenate Unley Road, encourage further investment and vitality to the area for the betterment of the community.

Yours sincerely,

Tony Franzon

STATE COMMISSION ASSESSMENT PANEL

A COMMITTEE OF THE STATE PLANNING COMMISSION

State Commission
Assessment Panel

Level 5
50 Flinders Street
Adelaide SA 5000

GPO Box 1815
Adelaide SA 5001

08 7109 7061

20 October 2017

8687 Cremorne Pty Ltd and 85 Cremorne Pty Ltd
– C/ JSA Management Pty Ltd
Level 1 86 Pirie Street
ADELAIDE SA 5000

Dear Sir/ Madam

| | |
|---|---|
| **Application Number:** | **090/M008/17** |
| **Applicant:** | **Catcorp Pty Ltd C/- Future Urban Group** |
| **Proposed Development:** | **Mixed use building comprising of commercial/retail tenancy, residential apartments, carparking, landscaping and associated site works** |
| **Subject Land:** | **244 – 246 Unley Road, Unley** |

As an adjoining owner/person potentially affected by the above development application, you are invited to view details of the application and make comment.

The application may be examined between 26 October 2017 and 8 November 2017 during normal business hours at the office of the State Commission Assessment Panel (SCAP), Level 5, 50 Flinders Street, Adelaide and at the office of the City of Unley.

The application documentation will also be available on the SCAP website (http://www.saplanningcommission.sa.gov.au/scap/public_notices) during the notification period.

If you wish to comment on the application please complete the attached form. This must reach the Secretary, State Commission Assessment Panel, GPO BOX 1815, Adelaide SA 5001 by no later than **Close of Business 8 November 2017.**

You may be given an opportunity to appear before the SCAP to further explain your views. You will be contacted should a hearing be arranged.

If you have any questions relating to this matter I can be contacted by telephone on 7109 7169 or via email karl.woehle@sa.gov.au

Yours sincerely

**Karl Woehle**
**Planning Officer**
*On behalf of*
**STATE COMMISSION ASSESSMENT PANEL**

**SOUTH AUSTRALIAN DEVELOPMENT ACT, 1993**
**REPRESENTATION ON APPLICATION – CATEGORY 2**

| | |
|---|---|
| **Applicant:** | Catcorp Pty Ltd C/- Future Urban Group |
| **Development Number:** | 090/M008/17 |
| **Nature of Development:** | Mixed use building comprising of commercial/retail tenancy, residential apartments, carparking, landscaping and associated site works |
| **Type of development:** | Merit |
| **Zone / Policy Area:** | High Street Policy Area 20 in the Urban Corridor Zone |
| **Subject Land:** | 244 – 246 Unley Road, Unley |
| **Contact Officer:** | Karl Woehle |
| **Phone Number:** | 7109 7169 |
| **Close Date:** | 8 November 2017 |

My name: Jian Ma

My phone number:

PRIMARY METHOD(s) OF CONTACT: Email address: yikema03@gmail.com

Postal address: 7 dudley Avenue, Daw Park

Postcode 5041

**You may be contacted via your nominated PRIMARY METHOD(s) OF CONTACT if you indicate below that you wish to be heard in support of your submission.**

My interests are:

- [x] owner of local property
- [ ] occupier of local property
- [ ] a representative of a company/other organisation affected by the proposal
- [ ] a private citizen

The address of the property affected is 248 Unley Road, Unley Postcode 5061

The specific aspects of the application to which I make comment on are:

Fully Support this development, letter of reason included.

**Should the State Commission Assessment Panel conduct a public hearing for this Development Application:**

I

- [ ] wish to be heard in support of my submission
- [x] do not wish to be heard in support of my submission

(Please tick one)

By

- [ ] appearing personally
- [ ] being represented by the following person:

(Please tick one)

Date 9/11/2017 Signature

**Return Address: The Secretary, State Commission Assessment Panel, GPO Box 1815, Adelaide SA 5001 or scapadmin@sa.gov.au.**

Attn: Karl Woehle
Via The Secretary
State Commission Assessment Panel
GPO BOX 1815
Adelaide SA 5001

To Karl,

**RE. CATEGORY 2 REPRESENTATION FOR DEVELOPMENT APPLICATION 090/M008/17 AT 244-246 UNLEY ROAD, UNLEY.**

As owner of 248 Unley Road, Unley, I write in support of the proposed development at 244-246 Unley Road, Unley (Development Application 090/M008/17).

I am supportive of the proposed development for the following reasons:

1. The height of the proposed development will not result in any unacceptable impacts on residential amenity by way of overshadowing, overlooking or visual impacts.
2. The presentation of the building to Hart Avenue is considered to be a substantial improvement.
3. The proposed height supports the development which achieves a greater variety of apartment sizes.
4. Increased densities are appropriate on this site in respect of its proximity to public transport, local services and areas of public amenity.
5. The ground level commercial tenancies will refresh the existing streetscape presentation, and support much needed activation along Unley Road.
6. The design and appearance of the building acknowledges the existing scale and character along Unley Road, whilst also supporting increased building heights and contemporary design.
7. The internal amenity provided via the landscaped atrium is anticipated to contribute significant amenity for the future occupants of the dwelling to enjoy.
8. The mix of apartments is appropriate, and the apartments themselves are appropriately designed with adequate floor areas, private open space, internal storage, natural light and ventilation, and noise controls.
9. The building is highly energy efficient, aiming to achieve a 7 Star average NatHER rating in addition to other ratings.
10. Sufficient car and bicycle parking has been provided to the development to accommodate the Development Plan rates and existing market demands, whilst also encouraging alternative forms of transport such as bicycles.

Overall, the development will act as a catalyst to commence a much needed revitalisation process along Unley Road and encourage other property owners and investors to deliver high quality development outcomes.

I do not wish to be heard in support of my representation.

Sincerely,

Mr Ma

19 December 2017

Level 1, 89 King William Street
GPO Box 2403
Adelaide SA 5001
PH: 08 8221 5511
E: info@futureurbangroup.com
W: www.futureurbangroup.com
ABN: 34 452 110 398

Mr Karl Woehle
Planning Officer - CBD & Inner Metro Team
Department of Planning, Transport and Infrastructure
Level 5, 50 Flinders Street
Adelaide SA 5000

Dear Karl,

## 246 UNLEY ROAD, UNLEY

We write in response to representations received during category 2 public notification and comments received from the City of Unley ("Council"), Office of Design and Architecture (SA) ("ODASA") and the Department of Planning, Transport and Infrastructure ("DPTI").

We have been provided with a total of nine (9) representations of which four (4) are valid. Of the valid representations, only the representation prepared by Mr Philip Goodyear opposes a component of the development. The remaining three (3) representations are in support of the proposal.

First, we will respond to Mr Goodyear's representation followed by the Council and agency comments.

### Response to Mr Philip Goodyear

Mr Goodyear supports the application with one negative observation which relates to the design quality of the ground level, the streetscape impact to Hart Avenue and the lack of landscaping proposed.

In response to Mr Goodyear's concerns, the proposal has been amended as follows:

- removal of one two-way crossover;
- introduction of an active retail shop along Hart Avenue;
- provision of landscaping (albeit temporary) adjacent to the future development site and along Hart Avenue to minimise views into the car park area; and
- Width of canopies increased to 1.8m with the exception of the 1.4m wide canopy which will be maintained at the Unley Road/Hart Avenue corner to maintain compliant offsets to the road boundaries.

In addition, as a result of further investigation the transformer has been relocated to Hart Avenue to improve the Unley Road frontage.

In relation to other comments raised by Mr Goodyear, we respond as follows:

- whilst there is no on-site loading zone for the waste truck, waste will still be collected on-site in the access way and not within Hart Avenue;
- the bin store and wash area located adjacent to Hart Avenue is screened from public view;

- there is potential for public realm work to be undertaken along Hart Avenue particularly towards Unley Road to accommodate additional landscaping and/or outdoor dining (if the corner tenancy will be a restaurant, café or the like). The indicative works shown simply depict a vision. The proponent is committed to working with Council to explore this vision for the betterment of the public realm once SCAP makes a determination;
- canopies are provided along Unley Road and have been deliberately separated at points to reinforce the context of lower scale built form to the north. The extent and increased width of the canopies is sufficient to protect pedestrians when walking along Unley Road or when utilising as a refuge when waiting for a bus.

Overall, we are of the opinion that the proposed amendments and resultant ground level design is acceptable and the proponent should be commended and encouraged to continue working with Council to improve the public realm.

## Response to Council Comments

The Council has made a number of comments which relate to both technical and planning matters. Our response will focus on the technical matters of significance as the planning and design issues will be dealt with by DPTI and ODASA, respectively. However, we do note that ODASA raises similar issues which we will respond to later.

The technical matters relate to encroachments; public realm and street trees; traffic and access; waste servicing; and, stormwater management.

*Encroachments*

The Council acknowledges that there are elements of the potential public realm works which comply and are inconsistent with its Policy. As previously mentioned, the proponent has simply depicted a vision as a basis to continue formal negotiations once SCAP determines the application.

*Footpath Canopies and Outdoor Dining Overhead Portal Structure (Pergola)*

The width of the footpath canopies has increased to 1.8m consistent with Council's recommendation. The final detail and design of the pergola structure will be resolved through a separate Council process and should not be intertwined with the planning merits of the proposal.

*Public Realm/Street Trees*

Upon our inspection of the Queensland Box street tree (Hart Avenue) adjacent to the subject site we note that one branch extending to the south will need to be pruned. The pruning will not adversely affect the health or structural integrity of the tree.

With respect to construction impacts, the proponent will prepare a Construction Management Plan ("CMP") which can be formalised as a condition of Development Plan Consent.

*Traffic*

Council has undertaken independent modelling and has confirmed that the proposal will only result in a minor impact on traffic in Hart Avenue.

The CMP will deal with traffic during the construction process.

*Access*

The amended plan addresses Council's concern with respect to the number of access ways along Hart Avenue.

The ground level car park will be open and available for visitors to the development. The basement car park will be provided with a security roller door as the car spaces are dedicated to the residential component of the development.

*Car Parking*

The Council's primary concerns in relation to the provision of car parking relates to distribution and allocation.

Table Un/5A suggests that non-residential development in the Urban Corridor Zone should be provided with a minimum of 3 vehicle parking spaces per 100 square metres of gross leasable floor area. The amended proposal provides a total of 690 square metres of commercial/retail floor area which generates a demand for 21 car spaces. These can be accommodated within the ground level car parking area plus two on-street car spaces in Hart Avenue. The ground level car park includes one conveniently located car parking space for use by disabled persons (Transportation PDC 24 and PDC 25).

The residential component of the proposed development generates the following car parking demands:

- 20 apartments under 75 square metres in floor area = 15 car parking spaces (0.75 x 20);
- 35 apartments over 75 square metres, but under 150 square metres in floor area = 43.75 car parking spaces (1.25 x 35);
- 4 apartments over 150 square metres in floor area = 7 car parking spaces (1.75 x 4); and
- 14.75 visitor car parking spaces in total (0.25 x 59).

The apartments generate a demand for 66 car parking spaces plus 15 car parking spaces for residential visitors.

60 car spaces are proposed to be accommodated in the basement levels. These 60 car spaces will be allocated to the residential apartments. Specifically, the 4 pairs of stacked car parking spaces located in the basement level will be allocated to apartments which are sold with two car parking spaces. While there is a shortfall of 6 resident car spaces it is important to note the following:

- the location of the subject site in an Urban Corridor Zone;
- accessibility to bus services and a potential future tram service;
- the provision of adequate on-site bicycle parking;
- opportunities for motor cycle or scooter parking within unused spaces in the basement levels.

The 19 ground level spaces will be shared between the non-residential component of the development and residential visitors due to the complementary peak periods associated with these land uses as envisaged by Transportation PDC 29.

Having regard to the above, we are of the opinion that the parking provision, distribution and allocation for the development, is acceptable.

*Waste Servicing*

The Council has recommended a number of improvements to the waste system and overall servicing arrangement. In response to these recommendations we respond as follows:

- there is no need to provide a dedicated E-Waste storage area as residents will arrange collection on the day and direct with the commercial contractor;
- a single chute with diverter is an acceptable waste system and is common throughout many recently constructed apartment developments;
- residents will be responsible for disposing food organics waste from the apartment to the bin store;
- 1100L bins have been used wherever possible to reduce the frequency of collection which based on the Rawtec report is estimated between 9 to 13 waste collection vehicle movements per week (subject to whether paper and cardboard is placed in the co-mingled recycling bins, instead of having separate collections for these streams);
- waste will be stored in two separate rooms both located on ground level. The eastern waste room contains the waste chute system which is connected to the residential levels above, whilst the other room is used for storage of waste prior to collection and the bin wash down area;
- the applicant will investigate the opportunity with the adjoining owner to the south to extend the accessway to Opey Avenue to provide drive-through circulation and avoid the need for reversing trucks. This opportunity will be contingent upon the willingness of the adjacent owner and their proposal.

*Stormwater Management*

The applicant is amenable to the SCAP including Council's recommended stormwater management condition.

With respect to the balance of conditions recommended by Council we only accept Condition 1, 4, 5, 8 (stormwater as mentioned above) and 9. SCAP is better placed to deal with the content, wording and legitimacy of the other recommended conditions noting that some of them are not enforceable or are only able to be included as notes if the application is granted Development Plan Consent.

## Response to ODASA Comments

After reviewing the ODASA comments, we, together with the applicant and Tectvs, held a meeting with DPTI and the Associate Government Architect on 8 November 2017 to discuss the issues raised. We then prepared amended plans and collated additional information to present back to DPTI and the Associate Government Architect's representative on 5 December 2017.

We respond to the key issues raised by ODASA following.

*Building Height*

The Associate Government Architect has recommended a review of the building height. The proposed development is seven storeys (24.5 metres) exceeding the maximum five storey limit (18.5 metres) prescribed by PDC 12.

Notwithstanding the fact that the Government Architect and Development Assessment Commission previously supported a seven storey building of much larger scale, bulk and mass than that proposed, we are of the opinion that the height of this particular development is acceptable in its existing and future context for the following reasons:

- the substantive component of the proposed building will be 18.5 metres in height (measured from Unley Road ground level to the top of balustrade at Level 5) which is the maximum building height envisaged by Urban Corridor Zone PDC 12;
- the height of the building is moderated through the strong podium element which is sited on the street boundary; the 5.3 metre building setback and 2.3 metre balcony setback above podium level to Level 5; and, the 7.8 metre building setback and 5.3 metre balcony setback of the upper level;
- while the subject site does not adjoin the Residential Streetscape (Built Form) Zone, the overall form of the building sits comfortably within the 30 degree building envelope plane anticipated by Urban Corridor Zone PDC 13;
- the proposed development is separated from the Residential Streetscape (Built Form) Zone between 32.16 metres (podium) and 37.66 metres (upper levels) which is a considerable distance to mitigate any potential overlooking, overshadowing or visual impacts that may occur as a result of the additional height;
- the subject site is located less than 100 metres south of the newly created Unley Central Precinct which will contemplate buildings of a higher scale than that proposed;
- the proposed development respects the existing low scale context through the strong and prominent podium form and will sit comfortably in the future context which will progressively overtime give rise to a new urban form in accord with the High Street Policy Area;
- there is potential for buildings within the zone to penetrate the Adelaide International Airport Obstacle Limitation Surface as stated in the desired character statement of the Urban Corridor Zone. This height is substantially higher than the proposed building height;
- the 18.5 metre height of the building to Unley Road (measured from Unley Road ground level to the top of balustrade at Level 5) relates to the width of the Unley Road carriageway to ensure a comfortable human scale is achieved and no overbearing bulk or mass overwhelms the public realm;
- the proposed development represents a density of 236 dwellings per hectare which is consistent with Urban Corridor Zone PDC 5; and
- the development will provide housing choice and employment opportunities satisfying Medium and High Rise Development Objective 1.

In addition to the above, there are a number of design features that should be recognised in the context of height, including:

- an accessible, safe and secure linkage is provided off Hart Avenue which has the potential to be integrated with a development on the adjacent southern site;
- all car parking is provided underground or to the rear and screened from the public realm;
- a range of adaptable dwelling types is provided;

- a high quality internal green atrium supported by services that ensure ongoing maintenance is provided which also assists in bringing in natural light and ventilation into the core of the building;
- innovative external shading in the form of green filigree provided to vertical screens has been provided along the western side of the building, along with balconies and windows which are recessed under the upper level slab;
- a higher level of apartment amenity is provided through the provision of private open space mostly in excess of minimum requirements;
- all habitable rooms and common circulation areas have access to natural light and ventilation.

In consideration of all the above, we have formed the opinion that the height of the proposed building is acceptable from an urban form perspective and warranted through the incorporation of high quality design features.

*Hart Avenue Built Form Composition, Activation and Crossover Consolidation*

The built form composition along the Hart Avenue frontage has been reviewed and amended as follows:

- removal of one two-way crossover;
- introduction of an active retail shop along Hart Avenue; and
- provision of landscaping and fencing (albeit temporary) adjacent to the future development site and along Hart Avenue to minimise views into the car park area.

As a result of further investigations, the transformer has been relocated to Hart Avenue to improve the Unley Road frontage.

In our opinion, the Hart Avenue frontage has been improved and responds positively to the comment raised by the Associate Government Architect.

*Site Context – Existing and Future and Three Dimensional Strategy above Podium Level*

Additional information has been provided to demonstrate how the proposed development will sit in its existing and future context. It is important to note in the Tectvs document (enclosed) how the podium relates to existing built form which we consider to contribute positively to the streetscape. The High Street Policy Area requires development to respect the predominant, traditional rhythm of narrow–fronted shop tenancies and the siting, height and street format. The proposal achieves this by:

- incorporating a dominant street level podium building form along Unley Road reflecting a two storey form with the upper levels offset and setback behind to reinforce a comfortable human scale;
- using modern materials and finishes within the podium to complement the key traditional building and shop-front elements including verandahs, parapet facades and clear-glazed narrow shop front displays;
- creating a largely continuous built edge to Unley Road whilst reflecting the traditional narrow-fronted tenancies within the podium form reflecting a fine-grain character and detailing; and
- reinforcing the nil street boundary setback to frame the Unley Road corridor.

With respect to the future context, the building form above the podium introduces a three dimensional strategy that is conscious of the traditional rhythm of narrow fronted shop tenancies albeit in a playful and contemporary manner that creates light and shade. The upper level of the building would read as discreet element by being set back. The desired character envisaged for the Urban Corridor Zone supports mixed use development along Unley Road to create a linear corridor that frames Unley Road and which creates an active street frontage. As depicted in the Tectvs document, the proposal achieves the desired character.

It is also important to note that development is expected to be designed within defined building envelopes where buildings at the periphery of the zone are to provide an appropriate height and scale transition to development in adjacent zones of a lower scale and intensity. The overall form of the development satisfies the defined building envelope set out under Urban Corridor Zone PDC 13.

*Overlooking*

New development within the Urban Corridor Zone is encouraged to mitigate overlooking through the use of building layout, location and design of windows and balconies, screening devices, landscaping and adequate separation between developments (Residential Development PDC 38).

The proposed development has been designed to be separated from the existing dwelling at 3 Hart Avenue, in order to prevent overlooking to a significant degree. At the upper levels, the building has been further setback to increase this separation as the height of the proposed building increases. The building itself is separated from the neighbouring Residential Streetscape (Built Form) Zone between 32.16 metres (podium) and 37.66 metres (upper levels). This considerable distance is anticipated to alleviate any potential issues relating to overlooking and indeed is greater than the minimum separation distance prescribed by Council Wide PDC 39.

In addition, the existing landscaping in the locality (and specifically that surrounding the private open space at 3 Hart Avenue) will also mitigate overlooking.

Respecting the above, we do not consider the potential for overlooking from the proposed development unacceptable, or detrimental to the amenity of residential properties contained within the Residential Streetscape (Built Form) Zone.

*Apartment Entry Sequence*

The residential lobby design has been amended to provide two secure entry doors from the ground level car park. The doors will be glazed to provide clear lines of sight. The Unley Road entry door will also be secure and glazed.

*Podium Expression at NE and SE Corners*

The relocation of the transformer to Hart Avenue has enabled a solid edge treatment to the southeast corner whilst opening up the frontage of the tenancy. A solid treatment to the northeast corner has been avoided as this tenancy will require maximum exposure to a potential outdoor dining area.

Overall the expression of the podium element reflects the finer grain character and scale of groupings of shops along Unley Road.

*Central Courtyard/Atrium Landscaping*

The central courtyard is an open air volume with a light transmitting roof structure above.

Courtyard planters, balcony edge planters and climbing species will be selected to suit not only the microclimate of the courtyard space, but also their relative proximity to the light transmitting roof structure and final growing media depth and materiality.

The central courtyard plants will be selected to suit low light and full to partial shade growing conditions, and will be finalised once the roof material selection and analysis of the light transmission levels can be made. The plant species proposed in the report provides a representation of the look and feel of the plant palette, with the majority of these species anticipated to be utilised in a finalised plant list.

Courtyard planters will vary in heights, ranging from 300mm, 450mm and 900mm, providing a dynamic and changing ground level experience, creating a variety of semi-private and communal spaces within the courtyard space. Raised planters will feature full depth soil profiles, with gravel mulch and irrigation, and will be drained at the base into the buildings hydraulic drainage network. Maintenance to the ground level courtyard planters will include general tidy up of mulch, weeding, periodic inspection of irrigation system, pruning and plant replacement and can be undertaken from within the courtyard space by the community body and formalised through by-laws under the community scheme.

The balcony edge planters will be approximately 300mm depth and will feature lightweight soil, with improved water holding capacity. Planters will feature decorative gravel mulch and irrigation, with an incorporated fertigation system, to minimise maintenance requirements. Balcony planters will utilise a light weight tub system, sitting within a waterproofed tray, which would enable the tub to be removed for replanting and or replacement, which can be undertaken from the public side of the balustrade or in an offsite location.

Climbing plants will be grown from planters up the climbing frames. Access to the planting location can be from courtyard level and in the highly infrequent scenario that access is required at height, for pruning and or re-training of tendrils, this can be achieved via scissor lift and or small spider crane. Final climber species selection may result in an intermediate launching position within the courtyard volume, from levels 2 & 4 or level 3, depending on the growth and vigour of the selected climber species, which will be based on light transmission. Climbing species will be selected on their low maintenance requirements and suitability to the light transmission and climbing support requirements.

*Inboard Bedrooms*

Residential apartments should be designed and sited to provide a high level of amenity for occupants through the inclusion of adequate private open space, storage and flexibility in the internal floor areas. The proposed development includes a range of 1, 2 and 3 bedroom apartments, with some also including a multi-purpose room which could be used for a variety of functions. The sliding doors featured to these rooms further enhance the adaptability of these spaces. It should also be considered that all apartments have the potential to be amalgamated to form larger apartments if required. Reluctantly, the apartments which contained these space have been amended so that this space is now located to the rear adjacent to the atrium. A high level window to these rooms is provided to allow natural light and ventilation whilst offering privacy for the occupant.

*Private Open Space*

All apartments are provided with balcony areas that exceed the minimum private open space areas.

*Air-Conditioners*

Additional detail has been provided in the Tectvs document that relates to the extent and design of screening elements. Vertical non-climbable screens that will encourage landscaping to grow vertically will obscure the air-conditioning units from view. A solid pre-cast external wall to the apartment will also protect the amenity of the occupant with respect to noise intrusion.

*Environmental Performance of Atrium/Circulation Space*

The atrium space has been designed to provide the occupants accessibility to a common space that has the characteristics of an external area within the built form.

This area has been designed as an external environment. The construction of the internal walls within this space are to be designed and constructed as external walls with the required fire rating and weather proofing as required for a building of Type A construction. Similarly, the balconies/walkways and all internal structure within this space are also to be built of Type A construction. The stair cases have been designed as external stairs in lieu of a fire isolated stair as defined under the BCA – in accordance with CL D1.8 NCC BCA Vol1. 2016. The MFS has reviewed the design and to date an in principle agreement has been reached (subject to detailed design to obtain Building Rules Consent).

The floating roof combined with the open stairs provides a level of 'free ventilation' and has been designed on the premise and requirements of BCA Part F4 – "Natural ventilation requirements' – this area complies with these provisions.

Habitable rooms with high level windows face the atrium. The design of the translucent roof sheeting aims to provide equivalented natural daylight to that of an externally covered balcony area. The clear roof material comprises of Makrolon solid polycarbonate. This is the only clear sheeting that provides the required light transmission coefficient for internal spaces using the Greenstar calculator. Although this is not a green-star building, we have adopted this design tool and applied it to this building. The Makrolon specification allows the transmittance of up to 90 percent of solar energy and 88 percent of visible light.

In summary the open area within the area is to be designed as an extrenal space both in its built form and specification. The glazed roof has been designed based on Greenstar performance criteria. The space complies and exceeds the BCA requirement for natural ventilation, and the open vertical stairs and life safety is supported by the SAMFS.

*Materials*

A materials sample board has been prepared and provided confirming the use of robust materials and no applied finishes.

## Response to DPTI Comments

We note that DPTI is generously supportive of the proposal however it has requested a corner cut-off at the Unley Road/Hart Avenue intersection, a consolidated Hart Avenue access, and the provision of a vehicular link between Opey Avenue and Hart Avenue.

We respond to DPTI's comments as follows:

- the transparent nature of the north-east edge of the built form will allow clear sightlines avoiding the need for a corner cut-off;
- access has now been consolidated to the western end of the site; and

- a vehicular link has been provided from Hart Avenue to the southern boundary of the site providing the opportunity for the adjacent owner to integrate access to establish the link through to Opey Avenue.

In our opinion, the comments raised by DPTI have been addressed.

We trust the above and enclosed amended plans satisfactorily respond to the representations, Council and agency comments. Should you need to discuss any of the matters raised or require any further information please do not hesitate to contact our office.

We hereby can confirm our attendance at the 18 January 2018 SCAP Hearing to respond to any submissions that may be heard.

Yours sincerely

Chris Vounasis
Director

Encl. Amended plans

LOCALITY PLAN

1:2500 @ A1  1:5000 @A3

HART AVENUE

P09
B–B

EXISTING TREE TO BE REMOVED

PRIVATE ENTRANCE

PUBLIC ENTRANCE

SERVICES

STORE

WASTE

BIN TRANSFER PATH

WASH DOWN

SERVICES

STAIR

ACCESS

305sqm

WASTE CHUTE

ADJACENT RESIDENCE

RESIDENTIAL STREETSCAPE (BUILT FORM)
URBAN CORRIDOR

ZONE BOUNDARY

A–A
P08

RAMP DOWN

STORAGE TANKS

SERVICES

LIFT

LOBBY

MAILBOXES

UNLEY ROAD

A–A
P08

STAIR

BICYCLE PARKING

275sqm

TRANSFORMER

TYPICAL BUILDING EXTENTS ABOVE SHOWN DASHED

BASEMENT EXTENTS BELOW SHOWN DASHED

FIRST FLOOR SLAB EXTENTS ABOVE SHOWN DASHED

EXISTING BOUNDARY LINE

PROPOSED BOUNDARY LINE FUTURE APPLICATION

ADJACENT SITE

B–B
P09

GROUND FLOOR
1:100 @ A1 1:200 @ A3

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P01

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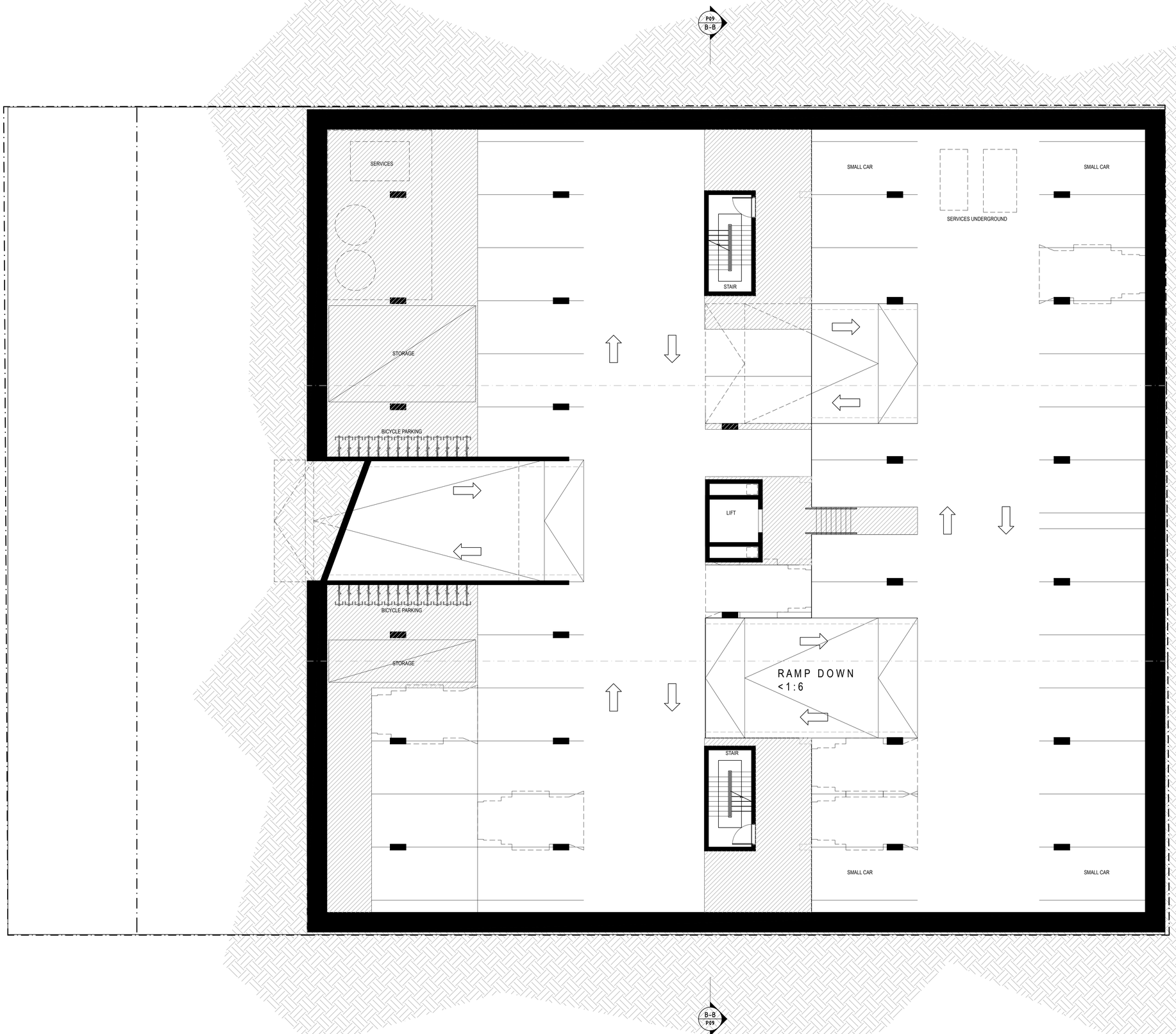


- BASEMENT
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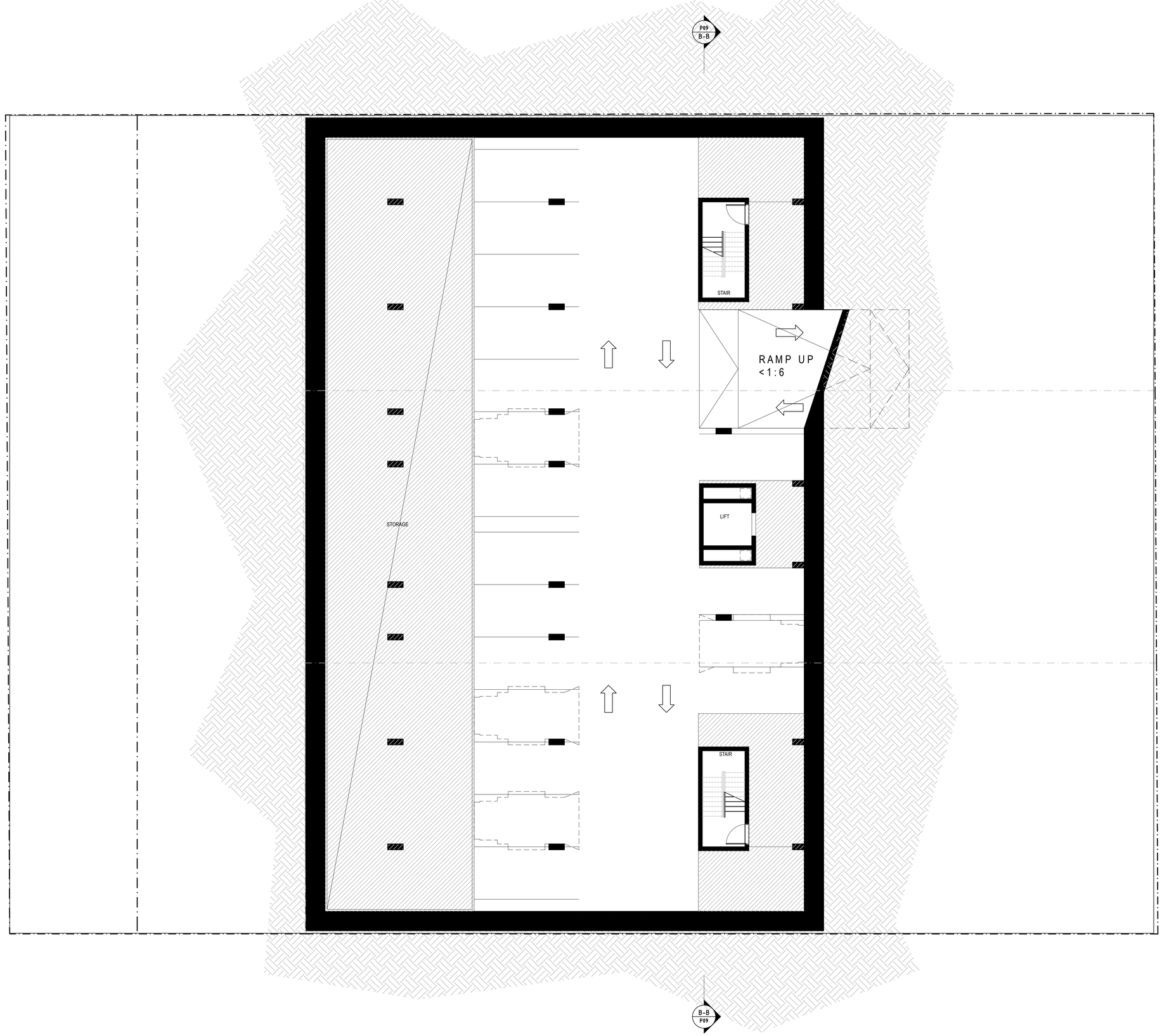


A-A
P08

A-A
P08

## LOWER BASEMENT

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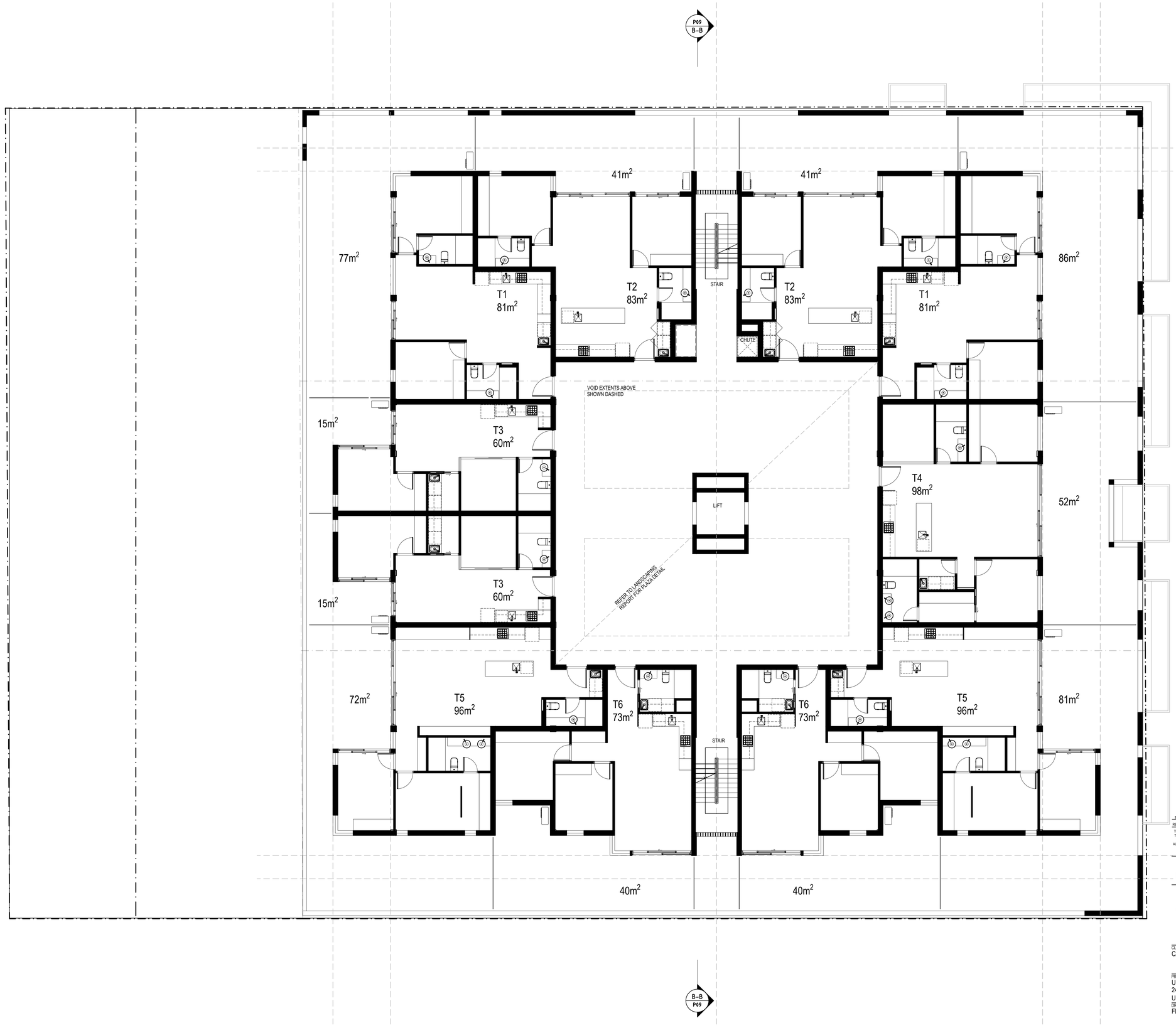


FIRST FLOOR
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10 02/08/2017 DPC ISSUE

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UNLEY

DRAWING
FLOOR PLAN

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SCALE
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DATE
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PROJECT NO
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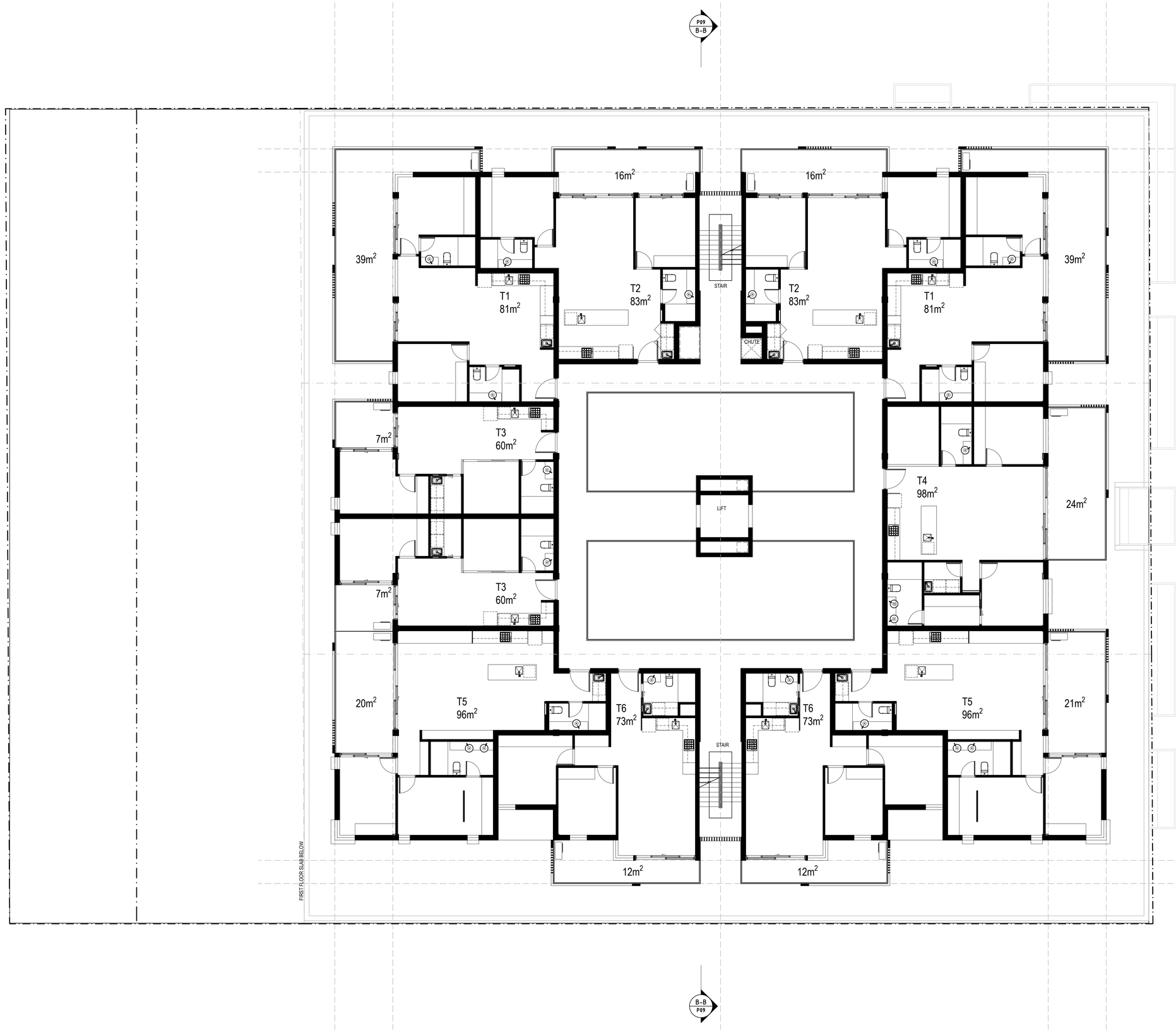


TYPICAL

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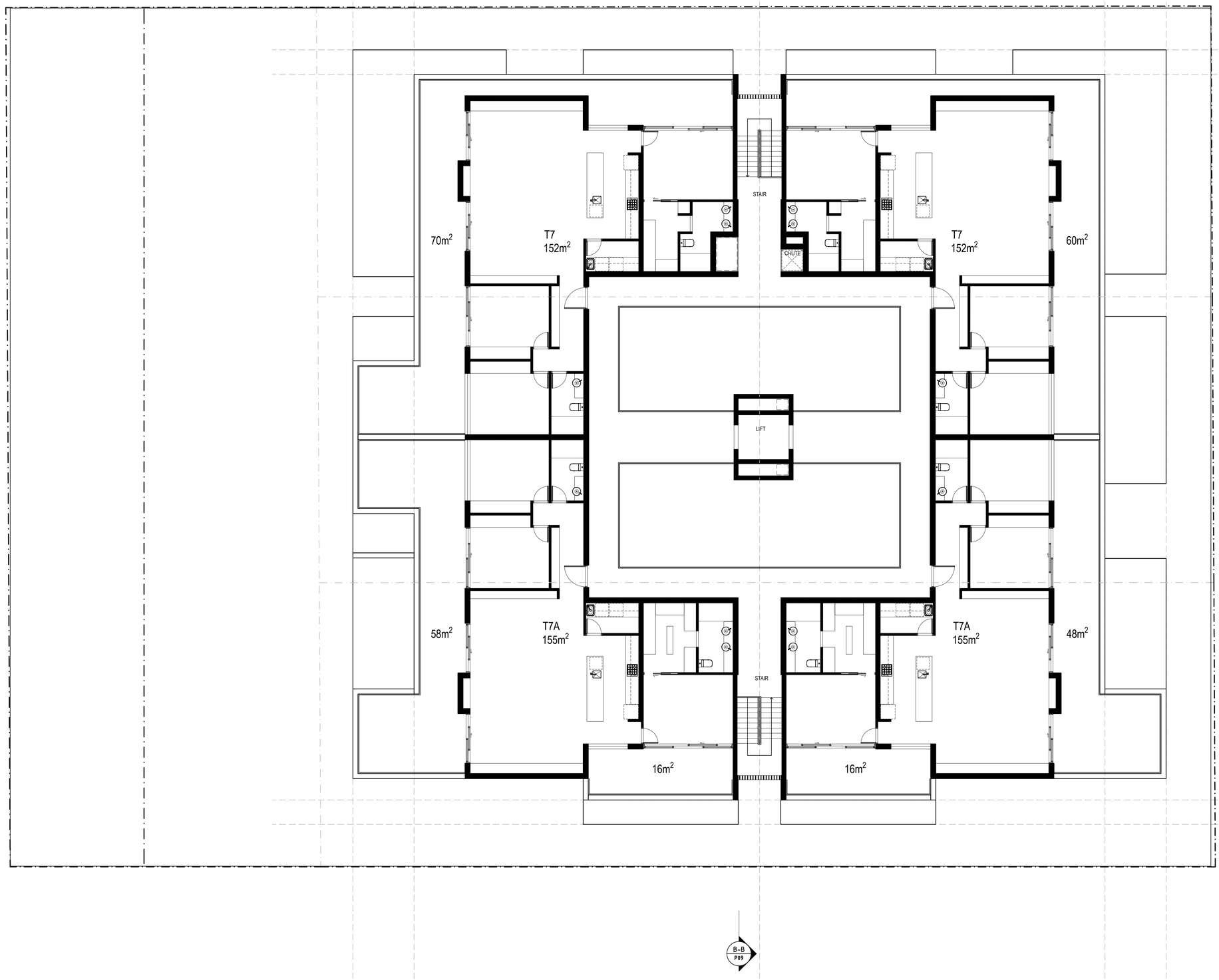
P09
B–B




A–A
P08

A–A
P08

B–B
P09

PENTHOUSE
1:100 @ A1 1:200 @ A3

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P06

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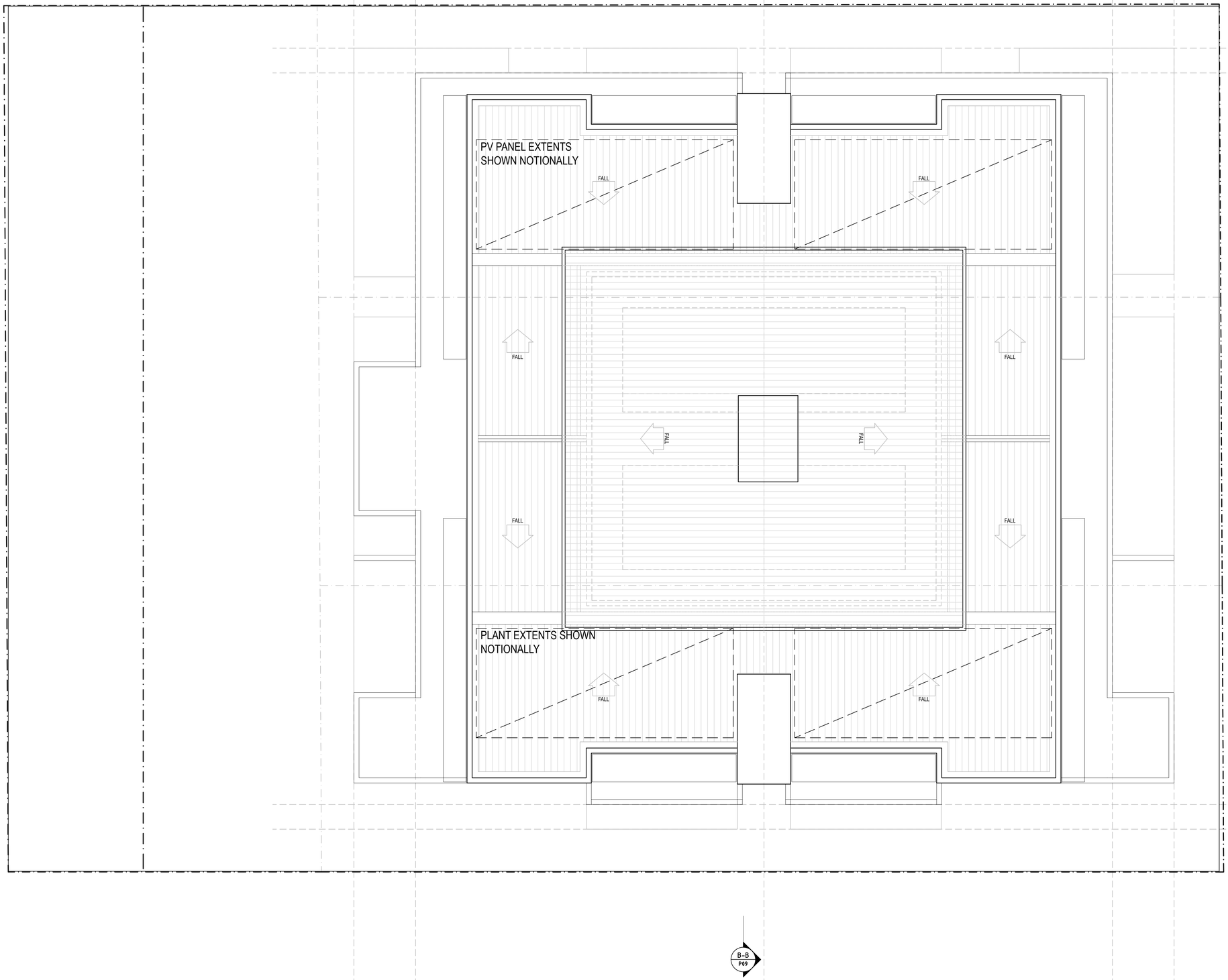
P09
B–B

A–A
P08

A–A
P08




B–B
P09

## ROOF PLAN

1:100 @ A1 1:200 @ A3

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UNLEY DEVELOPMENT
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UNLEY

DRAWING
FLOOR PLAN

NORTH

SCALE
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DATE
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PROJECT NO
27080

DWG NO
P07

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ZONE BOUNDARY — RESIDENTIAL STREETSCAPE (BUILT FORM) / URBAN CORRIDOR

BOUNDARY

PROPOSED SHIFT
FUTURE APPLICATION

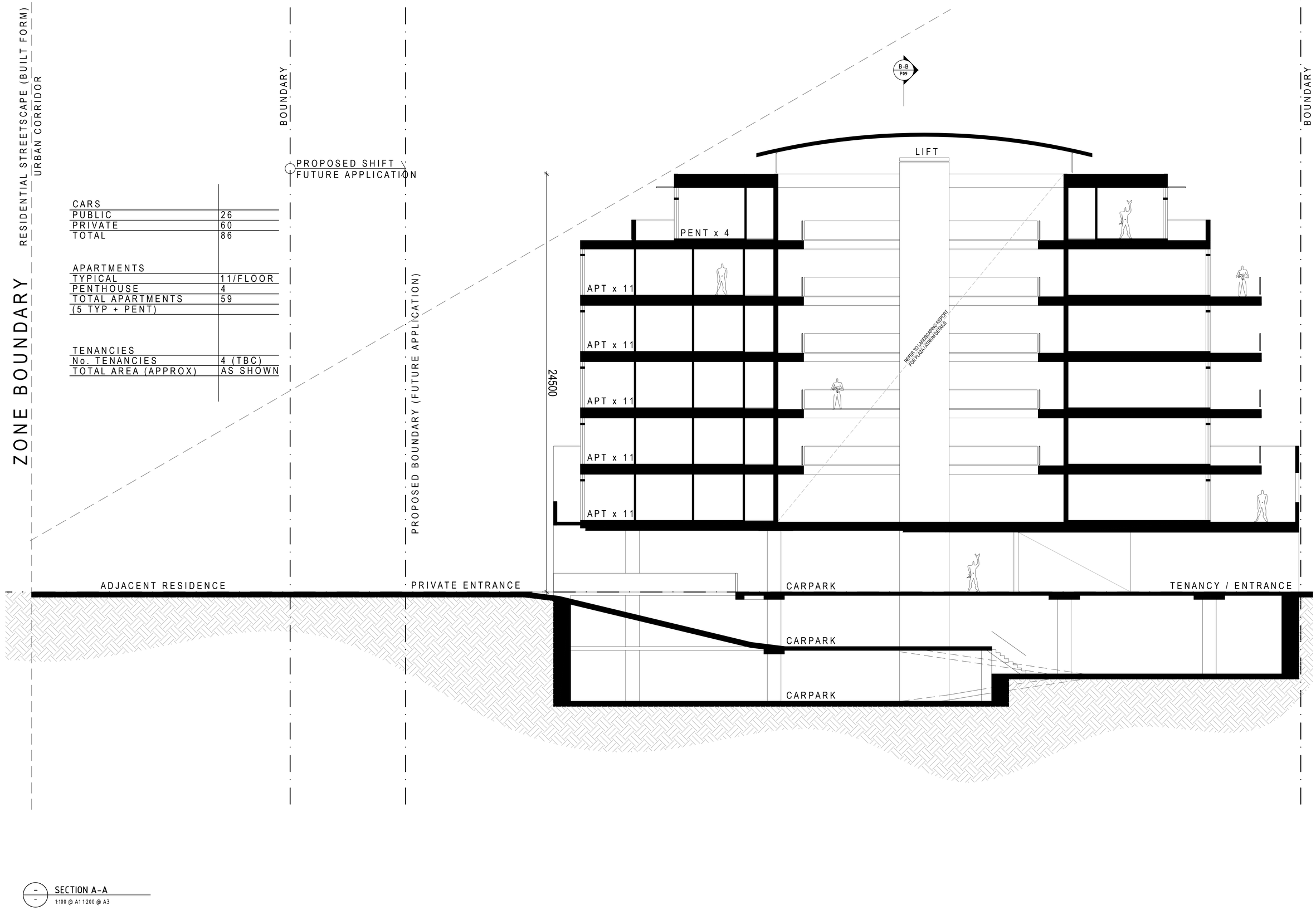
PROPOSED BOUNDARY (FUTURE APPLICATION)

BOUNDARY

| CARS | |
|---|---|
| PUBLIC | 26 |
| PRIVATE | 60 |
| TOTAL | 86 |

| APARTMENTS | |
|---|---|
| TYPICAL | 11/FLOOR |
| PENTHOUSE | 4 |
| TOTAL APARTMENTS (5 TYP + PENT) | 59 |

| TENANCIES | |
|---|---|
| No. TENANCIES | 4 (TBC) |
| TOTAL AREA (APPROX) | AS SHOWN |




SECTION A-A
1:100 @ A1 1:200 @ A3

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
SECTION

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P08

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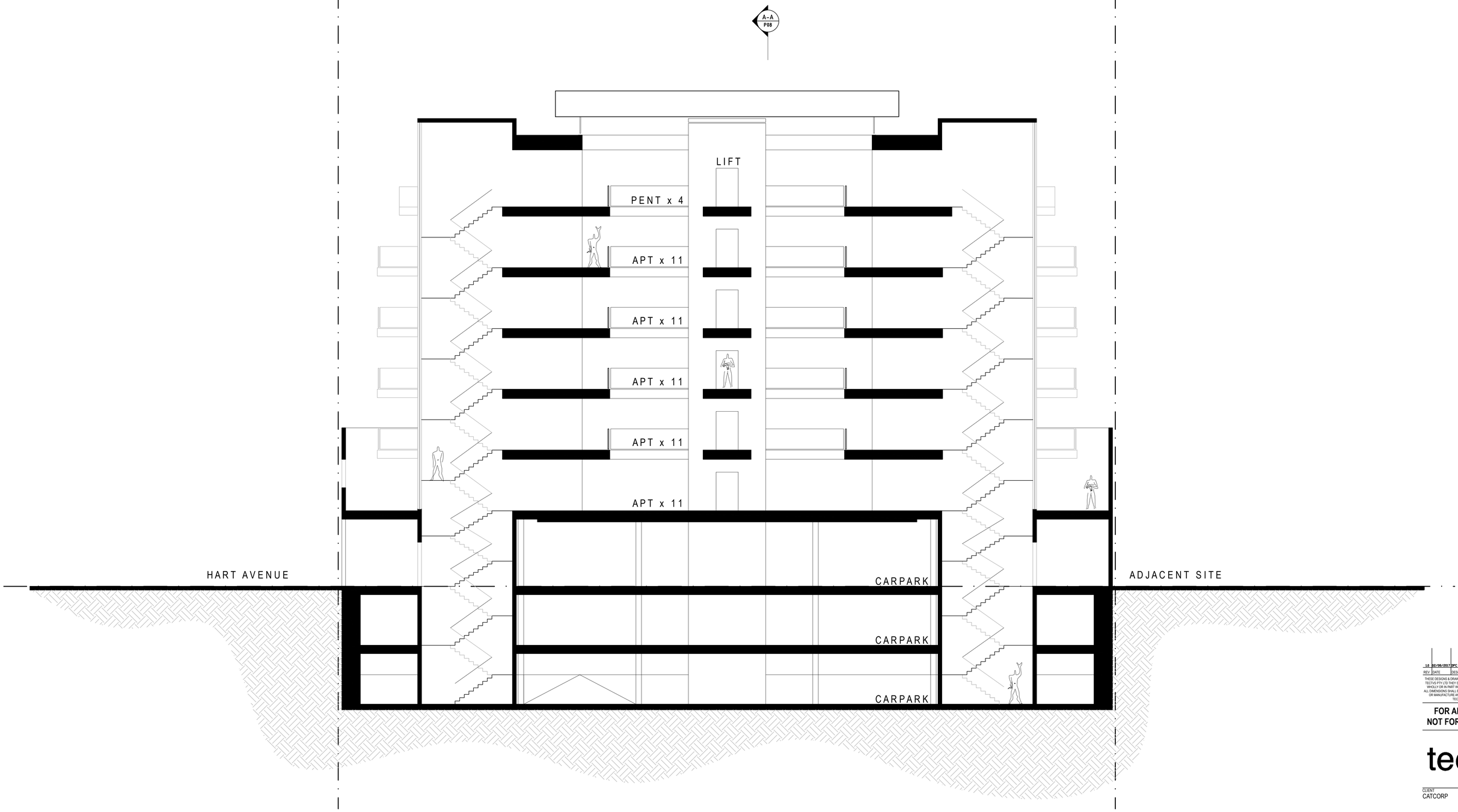


SECTION B-B
1:100 @ A1 1:200 @ A3

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
SECTION

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P09

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|---|---|---|
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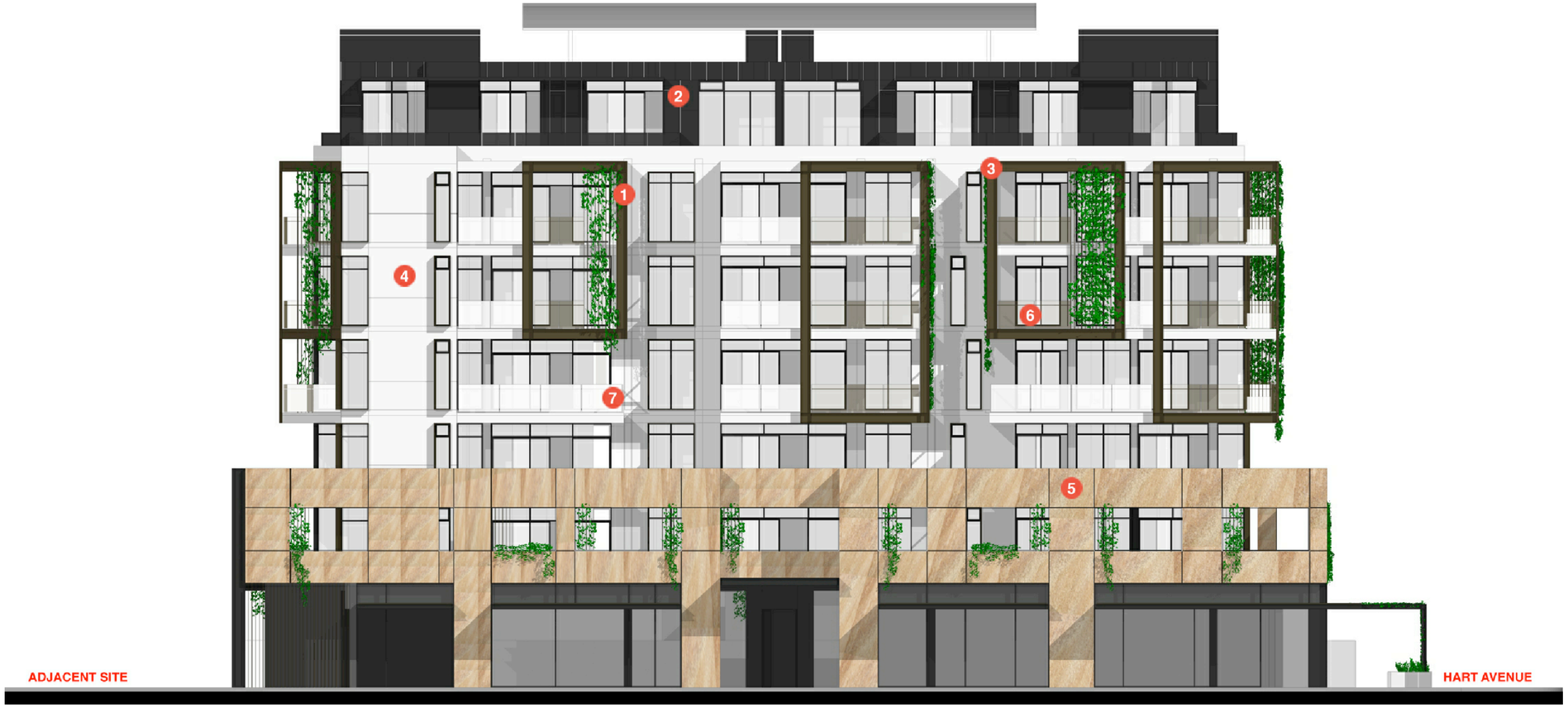
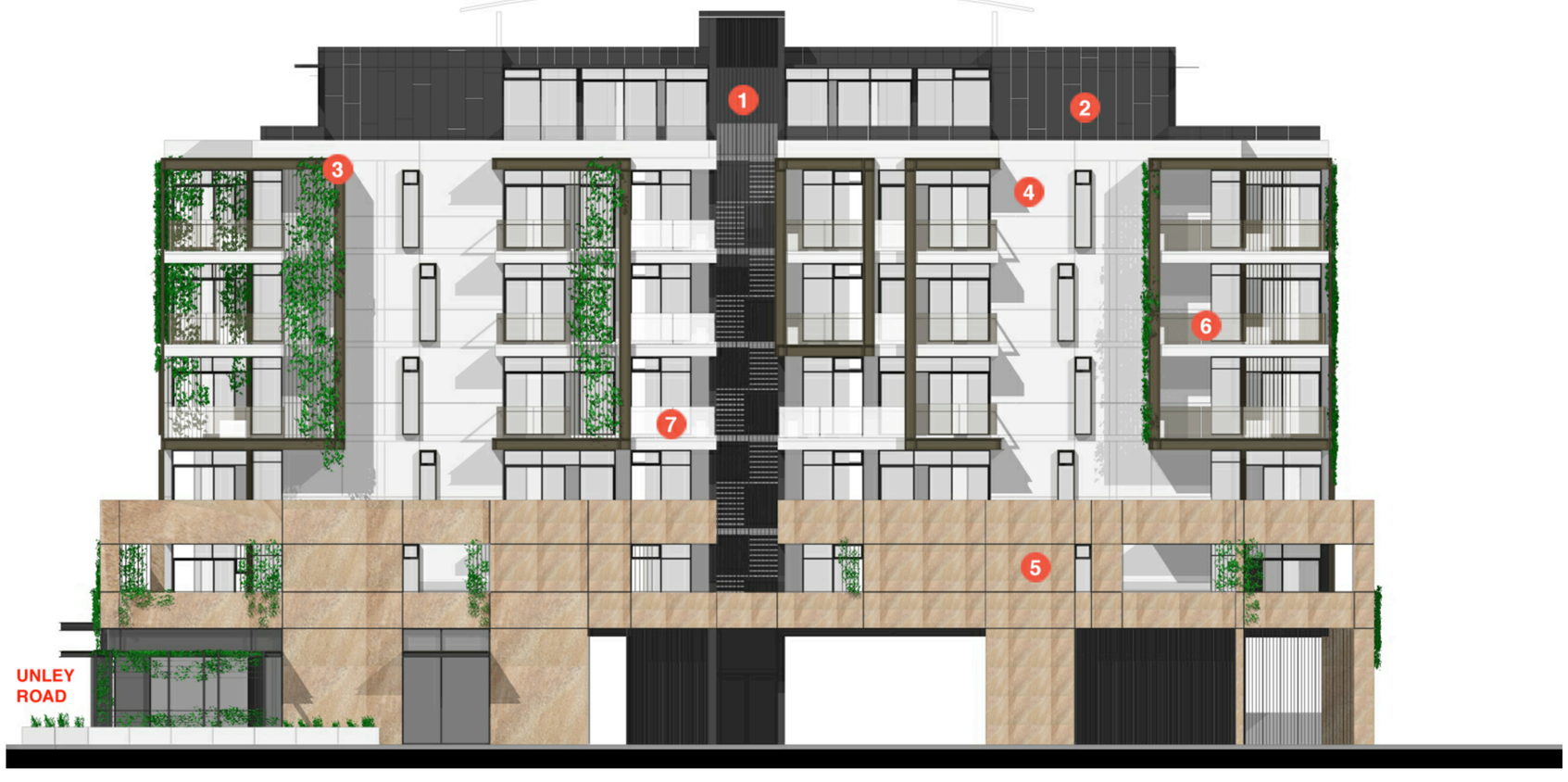



ELEVATION EAST

1:100 @ A1 1:200 @ A3




ELEVATION NORTH

1:100 @ A1 1:200 @ A3

MATERIALITY LEGEND

1 METAL SCREENING
2 METAL CLADDING
3 STEEL
4 STAINED PRECAST
5 STONEWORK
6 TINTED GLASS
7 CLEAR GLASS

NOTES:
- GREENWALLS / PLANTING AND LANDSCAPING SHOWN CONCEPTUALLY ONLY
- SUBJECT TO DEVELOPMENT - REFER TO LANDSCAPE REPORT FOR DETAIL

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
ELEVATIONS

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P10

| REVISION | CHECKED | DRAWN |
|---|---|---|
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ELEVATION WEST

1:100 @ A1 1:200 @ A3

ELEVATION SOUTH

1:100 @ A1 1:200 @ A3

MATERIALITY LEGEND

1 METAL SCREENING
2 METAL CLADDING
3 STEEL
4 STAINED PRECAST
5 STONEWORK
6 TINTED GLASS
7 CLEAR GLASS

NOTES:
- GREENWALLS / PLANTING AND LANDSCAPING SHOWN CONCEPTUALLY ONLY
- SUBJECT TO DEVELOPMENT - REFER TO LANDSCAPE REPORT FOR DETAIL

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PROJECT
UNLEY DEVELOPMENT
246 UNLEY ROAD
UNLEY

DRAWING
ELEVATIONS

NORTH

SCALE
AS SHOWN

DATE
AUGUST 2017

PROJECT NO
27080

DWG NO
P11

| REVISION | CHECKED | DRAWN |
|---|---|---|
| 1.0 | FB | mdf |

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## URBAN CORRIDOR ZONE

Refer to Maps Un/3, 4, 5 and 9 that relate to this zone.

### OBJECTIVES

**Objective 1:** A mixed use zone accommodating a range of compatible non-residential and medium and high density residential land uses orientated towards a high frequency public transport corridor.

**Objective 2:** Integrated, mixed use, medium and high rise buildings with ground floor uses that create active and vibrant streets with residential development above.

**Objective 3:** A mix of land uses that enable people to work, shop and access a range of services close to home.

**Objective 4:** Adaptable and flexible building designs that can accommodate changes in land use and respond to changing economic and social conditions.

**Objective 5:** A built form that provides a transition down in scale and intensity at the zone boundary to maintain the amenity of residential properties located within adjoining zones.

**Objective 6:** A safe, comfortable and appealing street environment for pedestrians that is sheltered from weather extremes, is of a pedestrian scale and optimises views or any outlook onto spaces of interest.

**Objective 7:** Noise and air quality impacts mitigated through appropriate building design and orientation.

**Objective 8:** Development that contributes to the desired character of the zone.

### DESIRED CHARACTER

This zone supports mixed use development on major road corridors and comprises non-residential development in association with medium to high density residential living, including more than 15 percent of dwellings as affordable housing. Development will create a linear corridor that will focus and frame the main road and create active street frontages. Buildings of 3 or more storeys will be the predominant built form, with key strategic sites developed with landmark buildings that will feature prominent, attractive and activating road facades.

The siting and design of buildings will achieve high quality urban design outcomes. Development will be undertaken within defined building envelopes. Buildings at the periphery of the zone will have an appropriate transition that relates to development in adjacent zones of a lower scale and intensity. Contextual qualities, including the setting and juxtaposition of heritage places/character items with new or refurbished development, will be respected.

The urban corridor roads function as major metropolitan transport movement systems as well as for local movement, access and parking. Restricted and consolidated vehicle access points will be available and access will be mainly from secondary road frontages, limited rear access lanes and through-site integrated and shared rights-of-way. Controlled pedestrian and cycle crossing points will be focused and consolidated at key locations. Development design and function will be people orientated with safe and convenient accessibility to and through buildings from roads and parking.

Parking areas will be consolidated and shared and screened from public view. Access and parking are to be sited and designed to minimise negative impacts on adjoining residential areas, including appropriate separation and screen and buffer landscaping. Road treatments are to be provided at the interface of the zone that correspond with the likely associated uses and discourage non-related traffic in residential streets.

A high amenity pedestrian environment will be established that provides integrated linkages to adjacent centres, public transport stops and public spaces. Access for people with disabilities, signage, seating and street lighting will be provided along key walking routes between public transport stops and major activity nodes. Cycle routes will be visible, safe, accessible, well signed and connected with key local destinations and the Parkland fringe.

Overlooking, overshadowing and emission impacts will be moderated through good design and mitigation techniques, however, it is noted noise and air amenity cannot be expected to be equivalent to a purely residential area. Impacts on adjoining zones will be minimised through appropriate land uses, building envelopes, transition of building heights, design and location of on-site activities/windows/balconies, and use of landscaping.

Well-designed landscaping will assist to visually soften large building façades, screen and buffer parking/service areas/zone interface areas, and provide amenity, biodiversity and micro-climate benefits.

Water sensitive urban design (WSUD) for the harvest, treatment, storage and reuse of stormwater, and environmentally sustainable design (ESD) for reduction in energy consumption through passive design, construction and operation is envisaged with development. Green (vegetated) places will assist urban heat island effects and roof top gardens will provide opportunities for private and communal open space.

Given the distinctly different land use mix and urban design features and street character intended for Greenhill Road and Unley Road, the zone is divided into two policy areas:

(a) Boulevard Policy Area – where taller, mixed use buildings of predominantly office uses at ground and low building levels and residential apartments above are intended along the Greenhill Road frontage with its premium Park Land interface where grand buildings and strong landscape settings are appropriate;

(b) High Street Policy Area – where more moderate scaled buildings of mixed use are intended along Unley Road with predominantly small scale shops, mixed business services and hospitality uses at ground and low building levels and upper level comprising residential apartments.

Detailed concept plans are prepared for distinct sections of the roads, detailing matters including desired accessways/road links, excluded property frontage access, variations to prescribed building heights, consolidated sites, heritage sites and any particular intended urban design element or feature.

The potential for buildings within the zone to penetrate the Adelaide International Airport Obstacle Surface Limitation exists. It is essential that development within the zone not impede the long-term operational, safety and commercial aviation requirements of the Adelaide International Airport.

**PRINCIPLES OF DEVELOPMENT CONTROL**

**Land Use**

**1** The following types of development, or combination thereof, are envisaged in the zone:

- affordable housing
- aged persons accommodation
- community centre
- consulting room
- dwelling
- educational establishment
- entertainment venue
- licensed premises
- office
- pre-school
- residential flat building

- retirement village
- shop or group of shops
- supported accommodation
- tourist accommodation.

**2** Development listed as non-complying is generally inappropriate.

**Form and Character**

**3** Development should be consistent with the desired character for the zone.

**4** Development should be in accordance with Concept Plan Maps Un/1 to 7.

**5** Residential development should achieve a minimum net residential site density in accordance with the following:

| **Policy Area** | **Minimum net residential site density** |
|---|---|
| Boulevard (Greenhill Road) Policy Area 19 | 75 dwellings per hectare net (except within the southern half of the Annesley Campus Area fronting Rose Terrace 35 dwellings per hectare net) |
| High Street (Unley Road) Policy Area 20 | 60 dwellings per hectare net |

**6** Vehicle parking should be located to the rear of development or not be visible from public land along the primary road frontage.

**Design and Appearance**

**7** Buildings on sites with a frontage greater than 10 metres should be well articulated through variations in forms, materials, openings and colours.

**8** Buildings should be designed and sited to address the primary public road and to face other public thoroughfares (other than rear laneways) and open spaces and to enable suitable sunlight access to public and common private open space as well as good daylighting of habitable room windows of dwellings.

**9** To maintain sight lines between buildings and the street, and to improve safety through passive surveillance, solid fencing should not be constructed between the front building line and the primary or secondary street.

**10** Development should minimise the number of access points onto an arterial road, and where possible access points should be:

(a) from local streets (including rear lane access) as identified on Concept Plan Maps Un/1 to 7;

(b) shared between developments.

**11** Vehicle access points on side streets and rear access ways should be located and designed to:

(a) minimise the impacts of headlight glare and noise on nearby residents;

(b) avoid excessive traffic flows into residential streets.

**Building Envelope**

*Building Height*

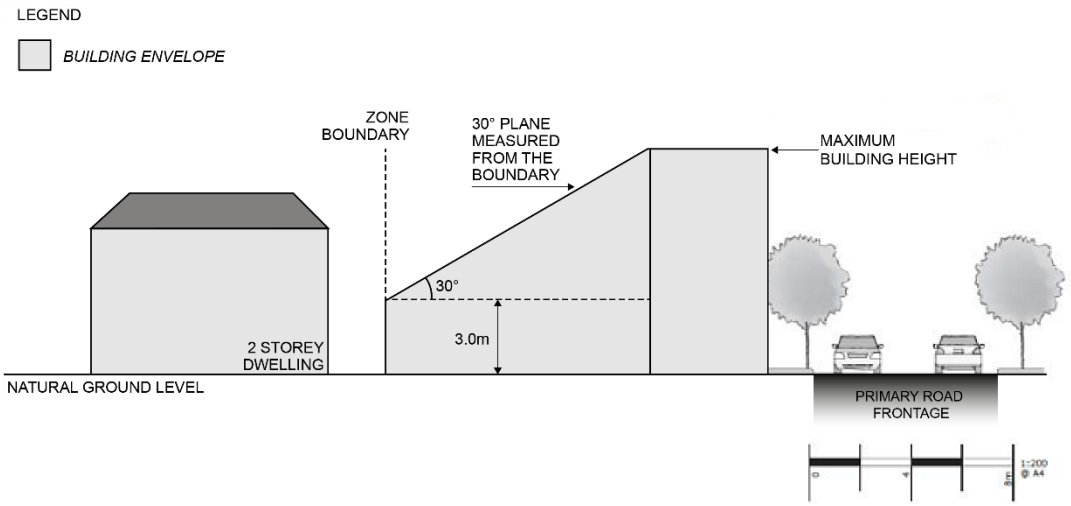
**12** Except where airport building height restrictions prevail, the interface height provisions require a lesser height, or an alternative maximum building height is shown on Concept Plan Maps Un/1 to 7, building heights (excluding any rooftop mechanical plant or equipment) should be consistent with the following parameters:

| Policy area | Minimum building height | Maximum building height |
|---|---|---|
| Boulevard (Greenhill Road) Policy Area 19 | 3 storeys (11.5 metres), or 4 storeys (15 metres) for land that is directly adjacent to or facing the Adelaide Park Lands. | 7 storeys and up to 25.5 metres |
| High Street (Unley Road) Policy Area 20 | 3 storeys (11.5 metres) | 5 storeys and up to 18.5 metres |

**Interface Height Provisions**

**13** To minimise building massing at the interface with development outside of the zone, buildings should be constructed within a building envelope provided by a 30 degree plane, measured from a height of 3 metres above natural ground level at the zone boundary (except where this boundary is a primary road frontage, as illustrated in Figure 1).

Figure 1




**Setbacks from Road Frontages**

**14** Buildings (excluding verandahs, porticos and the like) should be set back from the primary road frontage (exclusive of any land required under the Metropolitan Road Widening Act) in accordance with the following parameters

| Policy area | Minimum setback from the primary road frontage |
|---|---|
| Boulevard Policy Area | 6 metres |
| High Street Policy Area | No minimum (3 metre maximum setback where extended outdoor dining/licensed area only is proposed forward of the building) |

**15** Buildings (excluding verandahs, porticos and the like) should be set back from the secondary road frontage or a vehicle access way in accordance with the following parameters:

| **Designated area** | **Minimum setback from secondary road** | **Minimum setback from a rear access way** |
|---|---|---|
| Boulevard Policy Area | 3 metres | No minimum where the access way is 6.5 metres or more<br>OR<br>Where the access way is less than 6.5 metres in width, the distance equal to the additional width required to make the access way 6.5 metres or more, to provide adequate manoeuvrability for vehicles |
| High Street Policy Area | 0 metres for a distance of 20 metres from the primary road junction and 2 metres thereafter | As above |

**Other Setbacks**

**16** Buildings (excluding verandahs, porticos and the like) should be set back in accordance with the following parameters:

| **Designated area** | **Minimum setback from rear allotment boundary** | **Minimum setback from side boundaries (where not on a road boundary)** |
|---|---|---|
| Boulevard Policy Area | 5 metres where the subject land directly abuts an allotment of a different zone<br>3 metres in all other cases, except where the development abuts the wall of an existing or simultaneously constructed building on the adjoining land. | For allotments with a frontage width of :<br>(a) 20 metres or less: no minimum to one boundary but at least 3 metres to the other side boundary, with respective setbacks to create an orderly pattern of built form in accord with the Desired Character and desired consolidated sites in Concept Plan Maps Un/1 to 7<br>(b) more than 20 metres: 3 metres |
| High Street Policy Area | As above | 0 metres |

**Car Parking Efficiency**

**17** A lesser on-site car parking rate that still affords adequate provision may be applied to applicable elements of a development where justified based on local circumstances in relation to a reduced overall demand, efficiency of use of the parking provided or practical constraints, where:

(a) amalgamation of allotments occurs, or an agreement is formed to integrate and share adjoining parking areas, to create larger more functional and efficient parking areas incorporating a number of features, as follows:

(i) sites of greater than 2000 square metres and providing greater than 60 parking spaces;

(ii) side road frontage with two-way vehicle access provided;

(iii) convenient flow through two-way vehicle accessibility created between side roads;

(iv) rationalised, minimised or coordinated vehicle crossovers to roads and optimisation of on-street parking;

(b) development includes affordable housing or student accommodation;

(c) sites are located within 200 metres walking distance of a convenient and frequent service fixed public transport stop;

(d) mixed use development including residential and a variety of non-residential development has respective peak demands for parking occurring at different times;

(e) the proposed development is on or adjacent to the site of a heritage place, or includes retention of a desired traditional building and its features, which hinders the provision of on-site parking or the most effective use of the spaces within the building;

(f) the parking shortfall is met by contribution to the Car Parking Contributions Fund, or other arrangements, to provide improved or increased on-site parking elsewhere in convenient proximity;

(g) generous on-street parking and/or public parking areas are available and in convenient proximity, other than where such parking may become limited or removed by the probable future priority for traffic flow, parking restrictions, road modifications or widening (eg Strategic Transport Routes Map Un/1 (Overlay 4)).

**Land Division**

**18** Land division in the zone is appropriate provided new allotments are of a size and configuration to ensure the objectives of the zone can be achieved.

**19** Streets that provide rear access for vehicles should be created in accordance with Concept Plan Maps Un/1 to 7.

**Vehicle Parking**

**20** Vehicle parking should be provided in accordance with the rates set out in Table Un/5 - Off Street Vehicle Parking Requirements or Table Un/5A - Off Street Vehicle Parking Requirements for Designated Areas (whichever applies)

**PROCEDURAL MATTERS**

**Complying Development**

**21** Complying developments are prescribed in schedule 4 of the *Development Regulations 2008*.

In addition, the following forms of development (except where the development is non-complying) are complying:

Advertisement subject to the conditions contained in Table Un/1 - Conditions for Complying Development and other than in respect to a Heritage Place identified in Table Un/3 and Table Un/4.

A change of use to a shop, office, consulting room or any combination of these uses where all of the following are achieved:

(a) the area to be occupied by the proposed development is located in an existing building and is currently used as a shop, office, consulting room or any combination of these uses;

(b) the development is located inside any of the following area(s):

- High Street (Unley Road) Policy Area

(c) the building is not a State heritage place;

(d) it will not involve any alterations or additions to the external appearance of a local heritage place as viewed from a public road or public space;

(e) if the proposed change of use is for a shop that primarily involves the handling and sale of foodstuffs, it achieves either (i) or (ii):

(i) all of the following:

(A) areas used for the storage and collection of refuse are sited at least 10 metres from any Residential Zone boundary or a dwelling (other than a dwelling directly associated with the proposed shop);

(B) if the shop involves the heating and cooking of foodstuffs in a commercial kitchen and is within 30 metres of any Residential Zone boundary or a dwelling (other than a dwelling directly associated with the proposed shop), an exhaust duct and stack (chimney) exists or is capable of being installed for discharging exhaust emissions;

(ii) the development is the same or substantially the same as a development, which has previously been granted development approval under the *Development Act 1993* or any subsequent Act and Regulations, and the development is to be undertaken and operated in accordance with the conditions attached to the previously approved development;

(f) if the change in use is for a shop with a gross leasable floor area greater than 250 square metres and has direct frontage to an arterial road, it achieves either (i) or (ii):

(i) the primary vehicle access (being the access where the majority of vehicles access/egress the site of the proposed development) is from a road that is not an arterial road;

(ii) the development is located on a site that operates as an integrated complex containing two or more tenancies (and which may comprise more than one building) where facilities for off-street vehicle parking, vehicle loading and unloading, and the storage and collection of refuse are shared;

(g) off-street vehicular parking is provided in accordance with the rate(s) specified in Table Un/5 - Off Street Vehicle Parking Requirements or the desired minimum in rate in Table Un/5A - Off Street Vehicle Parking Requirements for Designated Areas (whichever table applies) to the nearest whole number, except in and one or more of the following circumstances:

(i) the building is a local heritage place;

(ii) the development is the same or substantially the same as a development, which has previously been granted development approval under the *Development Act 1993* or any subsequent Act and Regulations, and the number and location of parking spaces is the same or substantially the same as that which was previously approved;

(iii) the development is located on a site that operates as an integrated complex containing two or more tenancies (and which may comprise more than one building) where facilities for off-street vehicle parking, vehicle loading and unloading, and the storage and collection of refuse are shared.

**Non-complying Development**

**22** Development (including building work, a change in the use of land or division of an allotment) involving any of the following is **non-complying**:

Industry
Fuel depot
Petrol filling station
Major public service depot
Road transport terminal
Store
Transport depot
Warehouse
Waste reception storage treatment and disposal

**Public Notification**

**23** Categories of public notification are prescribed in Schedule 9 of the *Development Regulations 2008*.

In addition, the following forms of development, or any combination of (except where the development is classified as non-complying), are designated:

**Category 1**

Advertisement
Aged persons accommodation
All forms of development that are ancillary and in association with residential development
Consulting room
Dwelling
Educational establishment
Office
Pre-school
Residential flat building
Retirement village
Supported accommodation

Shop or group of shops:

(a) located within the High Street (Unley Road) Policy Area 17;

(b) located within the Boulevard (Greenhill Road) Policy Area 19 with a gross leasable area of 450 square metres or less

Tourist accommodation

**Category 2**

All forms of development not listed as Category 1

Any development listed as Category 1 and located on adjacent land to a residential zone that:

(a) is 3 or more storeys, or 11.5 metres or more, in height above natural ground level;

(b) exceeds the maximum building height in the Building Envelope Building Height or Concept Plan Maps Un/1 to 7;

(c) exceeds the Building Envelope Interface Height Provisions.

# High Street (Unley Road) Policy Area 20

Refer to Maps Un/14 and 18 that relate to this policy area.

**OBJECTIVES**

**Objective 1:** A mix of land uses including retail, office, commercial, community, civic and medium and high density residential development that support the economic vitality of the area.

**Objective 2:** Buildings sited to provide a continuous and consistent built edge with verandahs / awnings over the public footpath and an intimate built scale, with fine-grained detailing of buildings in the public realm.

**Objective 3:** An interesting and varied skyline as viewed from the street and afar, provided by modulation in roof forms and the use of parapets.

**Objective 4:** An intimate public realm with active streets created by buildings designed with frequently repeated frontage form and narrow tenancy footprints.

**Objective 5:** A high degree of pedestrian activity and a vibrant street-life with well lit and engaging shop fronts and business displays including alfresco seating and dining facilities and licensed areas.

**Objective 6:** Development that contributes to the desired character of the policy area.

**DESIRED CHARACTER**

This policy area includes two sections of the Unley Road corridor either side of the Unley District Centre and extending the full length of the road as far south as Northgate Street from Greenhill Road.

The maintenance of a safe and efficient movement system (for significant private vehicle numbers as well as critical public transport links) needs to be balanced with the desire to transform these strips into vibrant, intimate and appealing mixed use pedestrian friendly corridors of small scale retail, mixed business and entertainment facilities at ground and lower levels with medium to high density living at upper levels of multi-storey buildings.

Some incompatible land uses such as service trade premises, bulky goods outlets, warehousing and workshops need to be progressively replaced or redeveloped such that they are reduced to a minor floor area and/or without public road frontage.

High quality buildings and associated site works are sought which:

(a) improve the comfort, safety, convenience and appeal of the public realm and the pedestrian environment for visitors and residents by creating:

  (i) visually interesting, highly transparent and varied shop fronts and building entries;

  (ii) continuity of verandahs, awnings or canopies to provide shelter and shade;

  (iii) appealing through links to shops and businesses set behind the street frontage and also to ground level and multi-level car parking areas at the rear or underneath buildings;

  (iv) occasional outdoor dining areas extending in part over the public footway and linked to recessed buildings comprising restaurants and licensed premises;

  (v) paving, lighting, tree planting, furniture and amenities in areas to the rear of street fronting buildings and linked to key local movement networks, public reserves and common private spaces;

(vi) parking areas under, behind or within buildings, to ensure ground floor levels match public footpath levels along road frontages and provide for level access and direct interaction to the public realm.

(b) respect the predominant, traditional rhythm of narrow–fronted shop tenancies and the siting, height and street format by:

(i) retaining, adapting and redeveloping existing historic or appealing traditional buildings and developing 'behind' the converted street fronting shop or business facades;

(ii) developing or maintaining a dominant street level podium building form along the main road reflecting the one to two storey shop or commercial parapet façades traditionally associated with this strip and developing the core building element (and any building above 8.5 metres in total building height) offset and setback behind the ground level façade;

(iii) complementing in an innovative and contemporary manner, using modern materials and finishes, the key traditional building and shop-front elements including verandahs, parapet facades, detailed pediments, and clear-glazed narrow shop front displays above raised display levels (base stall boards) and recessed entries;

(iv) developing narrow buildings built side by side so as to create a largely continuous built edge to the street and reflecting the traditional narrow-fronted tenancies by creating varied and distinctive building facades through careful and fine-grained attention to building detailing;

(v) supporting the predominant street boundary setback, and no more than 3 metres (to allow for a wider pedestrian footway and outdoor dining area forward of the building) setback from the main road;

(c) create high quality living environments by:

(a) applying sustainable design solutions to optimise natural ventilation and capture of sun or natural daylight;

(b) optimising resident and visitor safety, convenience and amenity by providing reserved and secure car parks, lighting and surveillance of public and common spaces;

(c) locating and screening goods storage, refuse collection areas in a sensitive manner;

(d) locating and designing sensitive habitable rooms and balconies to optimise the utility of those spaces and minimise noise intrusion.

In order to achieve the desired building design outcome and car parking and access links, it will be necessary for existing small and narrow sites to be amalgamated and their redevelopment co-ordinated.

**PRINCIPLES OF DEVELOPMENT CONTROL**

**Land Use**

**1** Development should provide continuity of predominately narrow small ground floor shops, and limited offices and other non-residential land uses along the road corridor at ground level or first floor level, and residential development above.

**2** Existing service industries, workshops and storage activities should be removed or redeveloped to reduce these land uses to a minor floor area and not having a public street frontage.

**3** Shops or group of shops contained in a single building should have a maximum gross leasable area in the order of 450 square metres (per tenancy).

**Form and Character**

**4** Development should be consistent with the desired character for the policy area.

**5** The finished ground floor level should be at grade and level with the footpath.

**6** The ground floor of buildings should be built to dimensions including a minimum floor to ceiling height of 3.5 metres to allow for adaptation to a range of land uses including retail, office and residential without the need for significant change to the building.

**7** A minimum of 50 per cent of the ground floor primary frontage of buildings should be visually permeable, transparent or clear glazed to promote active street frontages and maximise passive surveillance.

**8** Buildings should maintain a pedestrian scale at street level, and on land identified on Concept Plan Maps Un/1, 2A and 2B,should:

(a) include a clearly defined podium or street wall fronting the High Street (Unley Road) Policy Area 20 main road and side streets where appropriate, of a height consistent with traditional one and two storey facades and no greater than two storeys or 8.5 metres in height;

(b) have levels above the defined podium or street wall setback a minimum of 3 metres from that wall.

**10** The integrity and spatial setting of a heritage place, and positive character facades, be respected by adjacent development providing appropriate setbacks, wall heights, format and features, and new and taller building elements being distinctly further setback and of lightweight subservient appearance.

**11** Development should be in accordance with Concept Plan Maps Un/1, 2A and 2B.

# COUNCIL WIDE

### Introduction

The following policies apply across the area within the boundary of the Unley (City) Development Plan, as shown on Map Un/1. This Development Plan has the City-wide Objectives and Principles of Development Control first, and grouped under various headings. These are followed by the individual zones which also have their Objectives and Principles of Development Control. After this are Tables which apply to all zones, and finally the maps, including zone maps.

Reference should be made to all parts of this Development Plan when ascertaining the relevant policies applying to any site.

## Crime Prevention

**OBJECTIVES**

**Objective 1:** A safe, secure, crime resistant environment where land uses are integrated and designed to facilitate community surveillance.

**PRINCIPLES OF DEVELOPMENT CONTROL**

**1** Development should promote the personal safety of people by:

(a) enabling them to be seen, to see and to interpret their surrounds, through:

(i) adequate lighting;

(ii) clear sightlines;

(iii) the elimination of entrapment spots;

(iv) the design of buildings to overlook public space;

(v) the mixing of activities which facilitate more constant public use;

(vi) appropriate use and design of landscaping and fencing;

(b) enabling them to leave an area or seek assistance when in danger, through legible design and comprehensive signage.

**2** Development should promote the security of property by:

(a) clearly defining ownership and legitimate use of private, public and community space

(b) minimising access between roofs, balconies and windows of adjacent buildings;

(c) avoiding the use of materials which are likely to be susceptible to damage and vandalism;

(d) avoiding landscaping and fencing which may present a security risk by providing concealment opportunities;

(e) screen planting and use of prickly plant species in areas susceptible to vandalism.

## Design and Appearance

**OBJECTIVES**

**Objective 1:** Development of a high design standard and appearance that responds to and reinforces positive aspects of the local environment and built form.

**Objective 2:** Roads, open spaces, paths, buildings and land uses laid out and linked so that they are easy to understand and navigate.

**PRINCIPLES OF DEVELOPMENT CONTROL**

**1** Buildings should reflect the desired character of the locality while incorporating contemporary designs that have regard to the following:

(a) building height, mass, proportion and siting;

(b) external materials, patterns, colours and decorative elements;

(c) roof form and pitch;

(d) façade articulation and detailing;

(e) verandahs, eaves, parapets and window screens.

**2** Where a building is sited on or close to a side or rear boundary, the boundary wall should minimise:

(a) the visual impact of the building as viewed from adjoining properties;

(b) overshadowing of adjoining properties and allow adequate sunlight access to neighbouring buildings.

**3** The external walls and roofs of buildings should not incorporate highly reflective materials which will result in glare to neighbouring properties, drivers or cyclists.

**4** Structures located on the roofs of buildings to house plant and equipment should be screened from view to the street and adjacent building viewing points (existing or envisaged) and should form an integral part of the building and roof top design in relation to creating an attractive appearance, external finishes and colours.

**5** Balconies should:

(a) be integrated with the overall form and detail of the building;

(b) include balustrade detailing that enables line of sight to the street;

(c) be recessed where wind would otherwise make the space unusable;

(d) be self-draining and plumbed to minimise runoff.

**Overshadowing**

9 The design and location of buildings should enable direct winter sunlight into adjacent dwellings and private open space and minimise the overshadowing of:

(a) windows of habitable rooms;

(b) upper-level private balconies that provide the primary open space area for a dwelling;

(c) solar collectors (such as solar hot water systems and photovoltaic cells).

**Visual Privacy**

**10** Development should minimise direct overlooking of the habitable rooms and private open spaces of dwellings through measures such as:

(a) appropriate site layout and building orientation;

(b) off-setting the location of balconies and windows of habitable rooms with those of other buildings so that views are oblique rather than direct to avoid direct line of sight;

(c) building setbacks from boundaries (including building boundary to boundary where appropriate) that interrupt views or that provide a spatial separation between balconies or windows of habitable rooms;

(d) screening devices (including fencing, obscure glazing, screens, external ventilation blinds, window hoods and shutters) that are integrated into the building design and have minimal negative effect on residents' or neighbours' amenity.

**11** Permanently fixed external screening devices should be designed and coloured to complement the associated building's external materials and finishes.

**Relationship to the Street and Public Realm**

**13** Buildings, landscaping, paving and signage should have a coordinated appearance that maintains and enhances the visual attractiveness of the locality.

**14** Buildings should be designed and sited to avoid extensive areas of uninterrupted walling facing areas exposed to public view.

**15** Building design should emphasise pedestrian entry points to provide perceptible and direct access from public street frontages and vehicle parking areas.

**16** In mixed use and medium and high density residential areas, development facing the street should be designed to provide interesting and pedestrian friendly street frontages by:

(a) including features such as frequent doors and display windows, retail shopfronts and/or outdoor eating or dining areas;

(b) minimising the frontage for fire escapes, service doors, plant and equipment hatches;

(c) avoiding undercroft, semi-basement or ground floor vehicle parking that is visible from the primary street frontage;

(d) using colour, vertical and horizontal elements, roof overhangs and other design techniques to provide visual interest and reduce massing.

**17** Where zero or minor setbacks are desirable, development should incorporate shelter over footpaths to enhance the quality of the pedestrian environment.

**Outdoor Storage and Service Areas**

**18** Outdoor storage, loading and service areas should be:

(a) screened from public view by a combination of built form, solid fencing and/or landscaping;

(b) conveniently located and designed to enable the manoeuvring of service and delivery vehicles;

(c) sited away from sensitive land uses.

**Building Setbacks from Road Boundaries**

**19** Except in areas where a new character is desired, the setback of buildings from public roads should:

(a) be similar to, or compatible with, setbacks of buildings on adjoining land and other buildings in the locality;

(b) contribute positively to the function, appearance and/or desired character of the locality.

**22** Except in areas where a new character is desired or where specified in a zone, policy area or precinct, the setback of development from a secondary street frontage should reflect the setbacks of the adjoining buildings and other buildings in the locality.

**23** All setbacks from the road frontage should be additional to the road widening setback established under the *Metropolitan Adelaide Road Widening Plan Act 1972*.

## Energy Efficiency

**OBJECTIVES**

**Objective 1:** Development designed and sited to conserve energy.

**Objective 2:** Development that provides for on-site power generation including photovoltaic cells and wind power.

**PRINCIPLES OF DEVELOPMENT CONTROL**

**1** Development should provide for efficient solar access to buildings and open space all year around.

**2** Buildings should be sited and designed:

(a) to ensure adequate natural light and winter sunlight is available to the main activity areas of adjacent buildings;

(b) so that open spaces associated with the main activity areas face north for exposure to winter sun;

(c) to allow for cross ventilation and natural cooling of buildings and zoning of building layouts to enable main living room areas to be separately heated and cooled;

(d) to incorporate roof top gardens and green 'living' walls, particularly for multi-storey and large developments, to reduce the 'urban heat island effect';

(e) to use energy efficient building materials or the re-use of existing materials (embodied energy).

**On-site Energy Generation**

**3** Development should facilitate the efficient use of photovoltaic cells and solar hot water systems by:

(a) taking into account overshadowing from neighbouring buildings;

(b) designing roof orientation and pitches to maximise exposure to direct sunlight.

**4** Public infrastructure and lighting, should be designed to generate and use renewable energy.

## Form of Development

### OBJECTIVES

**Objective 1:** Orderly and economic development.

**Objective 2:** The development of Adelaide as an international and national centre for cooperative research and innovation in science, technology, environmental management, education and the arts.

**Objective 3:** The establishment of urban development which provides models in the conservation and management of resources and the natural environment and the enhancement of natural site features, in urban planning and the provision of physical and social infrastructure.

A concept that encapsulates the vision of Adelaide as an international city where a wide variety of social and economic activities can occur and which provides models, through research, innovation and the application of technology, in the conservation and management of resources, the natural environment, urban planning community development and the provision of physical and social infrastructure.

The Adelaide economy built on research, education and advanced industries, serviced by advanced infrastructure and be export oriented. The principal industries identified for Adelaide are education, information technology and environmental management. Other important industries are media, leisure, tourism and health.

**Objective 4:** A proper distribution and segregation of living, working and recreational activities by the allocation of suitable areas of land for those purposes.

In the 21st Century Adelaide's growth will be accommodated through higher densities within the present urban area and development within the Willunga Basin and northern Adelaide Plains. The future form and nature of the existing metropolitan area will be influenced by meeting housing choice in the metropolitan area. Current and anticipated demographic trends in the metropolitan area indicate population growth but a changing population structure, with falling dwelling occupancy rates and declining population in many areas, particularly in the inner and middle suburbs, will necessitate increasing dwelling density to maintain population levels.

While taking these trends into account, there are social, environmental and economic benefits to be gained from higher residential densities within the metropolitan area and in turn this Plan promotes and seeks to implement a policy of housing choice.

It is an essential element in the future development of Adelaide, to address concerns about increased housing demand, efficient use of urban infrastructure and population change. This can be achieved by increasing the number of dwellings that can be accommodated within the existing boundary of the metropolitan area, and arresting and perhaps reversing the decline in population which has been evident in many parts of the metropolitan area.

While these aims are applicable across the metropolitan area, implementation must recognise the particular requirements of residential character and amenity, environmentally sensitive areas, water catchment areas, and other land which is subject to specific hazard or constraint.

**Objective 5:** Maintenance of the long-term operational, safety and commercial aviation requirements of the Adelaide International Airport and Parafield Airport.

**Objective 6:** Adequate public parks and recreation areas conveniently located.

Open spaces are needed in a city for outdoor recreation, and all age groups must be catered for. The size of the open spaces must be adequate, and they must be located conveniently for the people who use them.

**Objective 7:** The City of Unley will be a City that offers its citizens the best of living and working environments.

In the next decade, the City of Unley will be recognised for community spirit, desirable character, and business success in a sustainable and safe environment.

New people and investment growth will bring vibrancy to the City's tapestry of local communities supporting their environment and each other. Unley will be recognised for its social and economic innovations. Citizens will be proud of their environment, their successes and their strength of community well being.

Development will primarily occur on individual sites as compatible, complementary and reinforcing elements within the existing desirable form and character of localities and the City.

## PRINCIPLES OF DEVELOPMENT CONTROL

### General

**1** Development should be in accordance with the Unley Plan, Map Un/1 (Overlay 1) primarily by:

(a) concentrating comprehensive redevelopment and renewal for more intensive mixed activity and housing development along major transport corridors and within/adjacent to key centres and activity hubs;

(b) replacing existing buildings and land uses not contributing to a locality's character within areas of historic and valued streetscape character where revitalisation is warranted;

(c) restoring and conserving valued buildings and streetscape character, including the visual rhythms and patterns created by physical elements in a streetscape including the valued buildings, site proportions, building curtilage, fencing, mature trees and private gardens.

**2** Development should be orderly and economic.

**3** New housing and other urban development should create a safe, convenient and pleasant environment in which to live.

**4** No development, other than residential development and advertisements, should be erected, added to or altered on any land so that any portion of it is constructed nearer to the existing boundary of a road, or to the boundary of any land shown as being required for road widening on the plan deposited under the provisions of the *Metropolitan Adelaide Road Widening Plan Act, 1972-1976*, than the distance prescribed for each road or portion thereof in Column 3 of Table Un/2.

### Building Heights Adjacent to Airports

**10** Buildings and structures should not adversely affect by way of their height and location the long term operational, safety and commercial aviation requirements of Adelaide International Airport and Parafield Airport.

**11** Buildings and structures which exceed the heights shown on Map Un/1 (Overlay 2) and which penetrate the obstacle limitation surfaces (OLS) should be designed, marked or lit to ensure the safe operation of aircraft within the airspace around the Adelaide International Airport and Parafield Airport.

## Interface Between Land Uses

### OBJECTIVES

**Objective 1:** Development located and designed to minimise adverse impact and conflict between land uses.

**Objective 2:** Protect community health and amenity from adverse impacts of development.

**Objective 3:** Protect desired land uses from the encroachment of incompatible development.

### PRINCIPLES OF DEVELOPMENT CONTROL

**1** Development should not detrimentally affect the amenity of the locality or cause unreasonable interference through any of the following:

(a) the emission of effluent, odour, smoke, fumes, dust or other airborne pollutants

(b) noise

(c) vibration

(d) electrical interference

(e) light spill

(f) glare

(g) hours of operation

(h) traffic impacts.

**2** Development should be sited and designed to minimise negative impacts on existing and potential future land uses desired in the locality.

**3** Development adjacent to a **Residential Zone** should be designed to minimise overlooking and overshadowing of adjacent dwellings and private open space.

**4** Residential development adjacent to non-residential zones and land uses should be located, designed and/or sited to protect residents from potential adverse impacts from non-residential activities.

**5** Sensitive uses likely to conflict with the continuation of lawfully existing developments and land uses desired for the zone should be designed to minimise negative impacts.

**6** Non-residential development on land abutting a residential zone should be designed to minimise noise impacts to achieve adequate levels of compatibility between existing and proposed uses.

### Noise Generating Activities

**7** Development that emits noise (other than music noise) should include noise attenuation measures that achieve the relevant *Environment Protection (Noise) Policy* criteria when assessed at the nearest existing noise sensitive premises.

**8** Development with the potential to emit significant noise (e.g. industry) should incorporate noise attenuation measures that prevent noise from causing unreasonable interference with the amenity of noise sensitive premises.

**9** Outdoor areas (such as beer gardens or dining areas) associated with licensed premises should be designed or sited to minimise adverse noise impacts on adjacent existing or future noise sensitive development.

**10** Development proposing music should include noise attenuation measures that achieve the following desired noise levels:

| **Noise level assessment location** | **Desired noise level** |
|---|---|
| Adjacent existing *noise sensitive development* property boundary | Less than 8 dB above the level of background noise ($L_{90,15min}$) in any octave band of the sound spectrum<br>and<br>Less than 5 dB(A) above the level of background noise ($LA_{90,15min}$) for the overall (sum of all octave bands) A-weighted level |
| *Adjacent land* property boundary | Less than 65dB(Lin) at 63Hz and 70dB(Lin) in all other octave bands of the sound spectrum<br>or<br>Less than 8 dB above the level of background noise ($L_{90,15min}$) in any octave band of the sound spectrum and 5 dB(A) overall (sum of all octave bands) A-weighted level |

**Air Quality**

**11** Development with the potential to emit harmful or nuisance-generating air pollution should incorporate air pollution control measures to prevent harm to human health or unreasonable interference with the amenity of sensitive uses within the locality.

**12** Chimneys or exhaust flues associated with commercial development (including cafes, restaurants and fast food outlets) should be designed to ensure they do not cause a nuisance or health concerns to nearby sensitive receivers by:

(a) incorporating appropriate treatment technology before exhaust emissions are released to the atmosphere

(b) ensuring that the location and design of chimneys or exhaust flues maximises dispersion and takes into account the location of nearby sensitive uses.

*Landscaping*

**OBJECTIVES**

**Objective 1:** The amenity of land and development enhanced with appropriate planting and other landscaping works, using locally indigenous plant species where possible.

**PRINCIPLES OF DEVELOPMENT CONTROL**

**1** Landscaping of development should:

(a) be provided to soften the appearance of built form;

(b) complement the scale of the built form;

(c) be consistent with any particular desired character or important contextual features of the landscape setting in the locality;

(d) define spaces and edges;

(e) provide microclimate benefits such as shade and shelter;

(f) retain existing landscaping, where practicable;

(g) use species and techniques that require low water use and support and enhance local biodiversity;

(h) enhance the appearance of development, establish visual buffers to adjacent development and screen service, loading, outdoor storage and parking areas.

**2** Landscaping should not:

(a) unreasonably restrict solar access to habitable rooms and solar collection areas in adjoining development;

(b) be likely to cause structural damage or impact upon adjoining development through root damage and canopy drop;

(c) remove opportunities for passive surveillance to public areas;

(d) promote concealment and the potential for criminal activities adjacent to footpaths and public activity areas;

(e) introduce environmental weeds to sensitive environmental areas.

## Medium and High Rise Development (3 or More Storeys)

**OBJECTIVES**

**Objective 1:** Medium and high rise development that provides housing choice and employment opportunities.

**Objective 2:** Residential development that provides a high standard of amenity and adaptability for a variety of accommodation and living needs.

**Objective 3:** Development that is contextual and responds to its surroundings, having regard to adjacent built form and character of the locality and the Desired Character for the Zone and Policy Area.

**Objective 4:** Development that integrates built form within high quality landscapes to optimize amenity, security and personal safety for occupants and visitors.

**Objective 5:** Development that enhances the public environment, provides activity and interest at street level and a high quality experience for residents, workers and visitors by:

(a) enlivening building edges;

(b) creating attractive, welcoming, safe and vibrant spaces;

(c) improving public safety through passive surveillance;

(d) creating interesting and lively pedestrian environments;

(e) integrating public art into the development where it fronts the street and public spaces;

(f) incorporating generous areas of high quality fit for purpose landscaping.

**Objective 6:** Commercial, office and retail development that is designed to create a strong visual connection to the public realm and that contributes to the vitality of the locality.

**Objective 7:** Buildings designed and sited to be energy and water efficient.

## PRINCIPLES OF DEVELOPMENT CONTROL

*Note: Some of the following Principles of Development Control (PDC) prescribe a measurable design solution as one way of achieving the intent of the PDC. Where this solution is met, it should be taken as meeting the intent of the principle. Alternative design solutions may also achieve the intent of the PDC and, when proposed should be assessed on their merits.*

### Design and Appearance

**1** Buildings should be designed to respond to key features of the prevailing local context within the same zone as the development. This may be achieved through design features such as vertical rhythm, proportions, composition, material use, parapet or balcony height, and use of solid and glass.

**2** In repetitive building types, such as row housing, the appearance of building facades should provide some variation, but maintain an overall coherent expression such as by using a family of materials, repeated patterns, facade spacings and the like.

**3** Windows and doors, awnings, eaves, verandas or other similar elements should be used to provide variation of light and shadow and contribute to a sense of depth in the building façade.

**4** Buildings should:

(a) achieve a comfortable human scale at ground level through the use of elements such as variation in materials and form, building projections and elements that provide shelter (for example awnings, verandas, and tree canopies);

(b) be designed to reduce visual mass by breaking up the building façade into distinct elements;

(c) ensure walls on the boundary that are visible from public land include visually interesting treatments to break up large blank facades.

**5** Buildings should reinforce corners through changes in setback, materials or colour, roof form or height.

**6** Materials and finishes should be selected to be durable and age well to minimise ongoing maintenance requirements. This may be achieved through the use of materials such as masonry, natural stone, prefinished materials that minimise staining, discolouring or deterioration, and avoiding painted surfaces particularly above ground level.

**7** Balconies should be integrated into the overall architectural form and detail of the development and should:

(a) utilise sun screens, pergolas, louvres and openable walls to control sunlight and wind;

(b) be designed and positioned to respond to daylight, wind, and acoustic conditions to maximise comfort and provide visual privacy;

(c) allow views and casual surveillance of the street while providing for safety and visual privacy of nearby living spaces and private outdoor areas;

(d) be of sufficient size, particularly depth, to accommodate outdoor seating.

**Street Interface**

**8** Development facing the street should be designed to provide attractive, high quality and pedestrian friendly street frontage(s) by:

(a) incorporating active uses such as shops or offices, prominent entry areas for multi-storey buildings (where it is a common entry), habitable rooms of dwellings, and areas of communal public realm with public art or the like, where consistent with the zone and/or policy area provisions;

(b) providing a well landscaped area that contains a deep soil zone space for a medium to large tree in front of the building (except in a High Street Policy Area or other similar location where a continuous ground floor façade aligned with the front property boundary is desired). One way of achieving this is to provide a 4 metre x 4 metre deep soil zone area in front of the building;

(c) designing building façades that are well articulated by creating contrasts between solid elements (such as walls) and voids (for example windows, doors and balcony openings);

(d) positioning services, plant and mechanical equipment (such as substations, transformers, pumprooms and hydrant boosters, car park ventilation) in discreet locations, screened or integrated with the façade;

(e) ensuring ground, semi-basement and above ground parking does not detract from the streetscape;

(f) minimising the number and width of driveways and entrances to car parking areas to reduce the visual dominance of vehicle access points and impacts on pedestrian areas.

**9** Common areas and entry points of the ground floor level of buildings should be designed to enable surveillance from public land to the inside of the building at night.

**10** Entrances to multi-storey buildings should:

(a) be oriented towards the street;

(b) be visible and clearly identifiable from the street, and in instances where there are no active or occupied ground floor uses, be designed as a prominent, accentuated and welcoming feature;

(c) provide shelter, a sense of personal address and transitional space around the entry;

(d) provide separate access for residential and non-residential land uses;

(e) be located as close as practicable to the lift and/or lobby access;

(f) avoid the creation of potential areas of entrapment.

**11** To contribute to direct pedestrian access and street level activation, the finished ground level of buildings should be no more than 1**.**2 metres above the level of the footpath, except for common entrances to apartment buildings which should be at ground level or universally accessible.

**12** Dwellings located on the ground floor with street frontage should have individual direct pedestrian street access.

**13** The visual privacy of ground floor dwellings within multi-storey buildings should be protected through the use of design features such as the elevation of ground floors above street level, setbacks from street and the location of verandas, windows, porticos or the like.

One way of achieving this is for ground floor levels for multi storey residential developments to be raised by up to 1.2 metres (provided access is not compromised where relevant).

**Building Separation and Outlook**

**14** Residential buildings (or the residential floors of mixed use buildings) should have habitable rooms, windows and balconies designed and positioned with adequate separation and screening from one another to provide visual and acoustic privacy and allow for natural ventilation and the infiltration of daylight into interior and outdoor spaces.

One way of achieving this is to ensure any habitable room windows and/or balconies are separated by at least 6 metres from one another where there is a direct 'line of sight' between them and be at least 3 metres from a side or rear property boundary. Where a lesser separation is proposed, alternative design solutions may be applied (such as changes to orientation, staggering of windows or the provision of screens or blade walls, or locating facing balconies on alternating floors as part of double floor apartments), provided a similar level of occupant visual and acoustic privacy, as well as light access, can be demonstrated.

**15** Living rooms should have a satisfactory short range visual outlook to public or private open space.

**Dwelling Configuration**

**16** Buildings comprising more than 10 dwellings should provide a variety of dwelling sizes and a range in the number of bedrooms per dwelling.

**17** Dwellings located on the ground floor with street frontage should have habitable rooms with windows overlooking the street or public realm.

**18** Dwellings with 3 or more bedrooms, should, where possible, have the windows of habitable rooms overlooking internal courtyard space or other public space.

**Adaptability**

**19** Multi-storey buildings should include a variety of internal designs that will facilitate adaptive reuse, including the conversion of ground floor residential to future commercial use (i.e. by including floor to ceiling heights suitable for commercial use).

**Environmental**

**20** Multi-storey buildings should:

(a) minimise detrimental micro-climatic and solar access impacts on adjacent land or buildings, including effects of patterns of wind, temperature, daylight, sunlight, glare and shadow;

(b) incorporate roof designs that enable the provision of photovoltaic cells and other features that enhance sustainability (including landscaping).

**21** Green roofs (which can be a substitute for private or communal open space provided they can be accessed by occupants of the building) are encouraged for all new residential commercial or mixed use buildings.

**22** Development of 5 or more storeys, or 21 metres or more in building height (excluding the rooftop location of mechanical plant and equipment), should be designed to minimise the risk of wind tunnelling effects on adjacent streets by adopting one or more of the following:

(a) a podium at the base of a tall tower and aligned with the street to deflect wind away from the street;

(b) substantial verandas around a building to deflect downward travelling wind flows over pedestrian areas;

(c) the placement of buildings and use of setbacks to deflect the wind at ground level.

**23** Deep soil zones should be provided to retain existing vegetation or provide areas that can accommodate new deep root vegetation, including tall trees with large canopies.

One way of achieving this is in accordance with the following table:

| **Site area** | **Minimum deep soil area** | **Minimum dimension** | **Tree/ deep soil zones** |
|---|---|---|---|
| <300m$^2$ | 10m$^2$ | 1.5 metres | 1 small tree / 10m$^2$ deep soil |
| 300-1500m$^2$ | 7% site area | 3 metres | 1 medium tree / 30m$^2$ deep soil |
| >1500m$^2$ | 7% site area | 6 metres | 1 large or medium tree / 60m$^2$ deep soil |
| **Tree size and site area definitions** | | | |
| Small tree: | < 6 metres mature height and < less than 4 metres canopy spread | | |
| Medium tree: | 6-12 metres mature height and 4-8 metres canopy spread | | |
| Large tree: | 12 metres mature height and > 8 metres canopy spread | | |
| Site area: | The total area for development site, not average area per dwelling | | |

**24** Deep soil zones should be provided with access to natural light to assist in maintaining vegetation health.

**Site Facilities and Storage**

**25** Dwellings should provide a covered storage area of not less than 8 cubic metres in one or more of the following areas:

(a) in the dwelling (but not including a habitable room)

(b) in a garage, carport, outbuilding or an on-site communal facility and be conveniently located and screened from view from streets and neighbouring properties.

**26** Development should provide a dedicated area for the on-site collection and sorting of recyclable materials and refuse, green organic waste and wash-bay facilities for the ongoing maintenance of bins. This area should be screened from view from public areas so as to not to detract from the visual appearance of the ground floor.

**27** Where the number of bins to be collected kerbside is 10 or more at any one time, provision should be made for on-site commercial collection.

**28** The size of lifts, lobbies and corridors should be sufficient to accommodate movement of bicycles, strollers, mobility aids and visitor waiting areas.

**Zone Interface**

**29** Unless separated by a public road or reserve, development site(s) adjacent to any zone that has a primary purpose of accommodating low rise (1 to 2 storey) residential activity should incorporate deep soil zones along the common boundary to enable medium to large trees to be retained or established to assist in screening new buildings of 3 or more storeys in height.

One way of achieving this is for development comprising building elements of three or more storeys in height to be setback at least 6 metres from a zone boundary, and incorporate a deep soil zone area capable of accommodating medium to large trees with a canopy spread of not more than 8 metres when fully mature.

*Natural Resources*

**OBJECTIVES**

**Objective 1:** Retention, protection and restoration of the natural resources and environment.

**Objective 2:** Protection of the quality and quantity of South Australia's surface waters, including inland, and underground waters.

**Objective 3:** The ecologically sustainable use of natural resources including water resources, ground water, surface water and watercourses.

**Objective 4:** Natural hydrological systems and environmental flows reinstated, and maintained and enhanced.

**Objective 5:** Development consistent with the principles of water sensitive design.

**Objective 6:** Development sited and designed to:

(a) protect natural ecological systems;

(b) achieve the sustainable use of water;

(c) protect water quality, including receiving waters;

(d) reduce runoff and peak flows and prevent the risk of downstream flooding;

(e) minimise demand on reticulated water supplies;

(f) maximise the harvest and use of stormwater;

(g) protect stormwater from pollution sources.

**Objective 7:** Storage and use of stormwater which avoids adverse impact on public health and safety.

**Objective 8:** Native flora, fauna and ecosystems protected, retained, conserved and restored.

**Objective 9:** Restoration, expansion and linking of existing native vegetation to facilitate habitacorridors for ease of movement of fauna.

**Objective 10:** Minimal disturbance and modification of the natural landform.

**Objective 11:** Protection of the physical, chemical and biological quality of soil resources.

**Objective 12:** Protection of areas prone to erosion or other land degradation processes from inappropriate development.

**Objective 13:** Protection of the scenic qualities of natural and rural landscapes.

**PRINCIPLES OF DEVELOPMENT CONTROL**

**1** Development should be undertaken with minimum impact on the natural environment, including air and water quality, land, soil, biodiversity, and scenically attractive areas.

**2** Development should ensure that South Australia's natural assets, such as biodiversity, water and soil, are protected and enhanced.

**3** Development should not significantly obstruct or adversely affect sensitive ecological areas such as creeks, wetlands.

**4** Development should be appropriate to land capability and the protection and conservation of water resources and biodiversity.

**Water Sensitive Design**

**5** Development should be designed to maximise conservation, minimise consumption and encourage reuse of water resources.

**6** Development should not take place if it results in unsustainable use of surface or underground water resources.

**7** Development should be sited and designed to:

(a) capture and re-use stormwater, where practical;

(b) minimise surface water runoff;

(c) prevent soil erosion and water pollution;

(d) protect and enhance natural water flows;

(e) protect water quality by providing adequate separation distances from watercourses and other water bodies;

(f) not contribute to an increase in salinity levels;

(g) avoid the water logging of soil or the release of toxic elements;

(h) maintain natural hydrological systems and not adversely affect:

(i) the quantity and quality of groundwater;

(ii) the depth and directional flow of groundwater;

(iii) the quality and function of natural springs.

**8** Water discharged from a development site should:

(a) be of a physical, chemical and biological condition equivalent to or better than its pre-developed state;

(b) not exceed the rate of discharge from the site as it existed in pre-development conditions.

**9** Development should include stormwater management systems to protect it from damage during a minimum of a 1-in-100 year average return interval flood.

**10** Development should have adequate provision to control any stormwater over-flow runoff from the site and should be sited and designed to improve the quality of stormwater and minimise pollutant transfer to receiving waters.

**11** Development should include stormwater management systems to mitigate peak flows and manage the rate and duration of stormwater discharges from the site to ensure the carrying capacities of downstream systems are not overloaded.

**12** Development should include stormwater management systems to minimise the discharge of sediment, suspended solids, organic matter, nutrients, bacteria, litter and other contaminants to the stormwater system.

**13** Stormwater management systems should preserve natural drainage systems, including the associated environmental flows.

**14** Stormwater management systems should:

(a) maximise the potential for stormwater harvesting and re-use, either on-site or as close as practicable to the source;

(b) utilise, but not be limited to, one or more of the following harvesting methods:

(i) the collection of roof water in tanks;

(ii) the discharge to open space, landscaping or garden areas, including strips adjacent to car parks;

(iii) the incorporation of detention and retention facilities;

(iv) aquifer recharge.

**15** Where it is not practicable to detain or dispose of stormwater on site, only clean stormwater runoff should enter the public stormwater drainage system.

## Renewable Energy

### OBJECTIVES

**Objective 1:** The development of renewable energy facilities, such as wind and biomass energy facilities, in appropriate locations.

**Objective 2:** Renewable energy facilities located, sited, designed and operated to avoid or minimise adverse impacts and maximise positive impacts on the environment, local community and the State.

### PRINCIPLES OF DEVELOPMENT CONTROL

**1** Renewable energy facilities, including wind farms, should be located, sited, designed and operated in a manner which avoids or minimises adverse impacts and maximises positive impacts on the environment, local community and the State.

**2** Renewable energy facilities, including wind farms, and ancillary developments should be located in areas that maximise efficient generation and supply of electricity.

**3** Renewable energy facilities, including wind farms, and ancillary development such as substations, maintenance sheds, access roads and connecting power-lines (including to the National Electricity Grid) should be located, sited, designed and operated in a manner which:

(a) avoids or minimises detracting from the character, landscape quality, visual significance or amenity of the area;

(b) utilises elements of the landscape, materials and finishes to minimise visual impact;

(c) avoids or minimises adverse impact on areas of native vegetation, conservation, environmental, geological, tourism or built or natural heritage significance;

(d) does not impact on the safety of water or air transport and the operation of ports, airfields and designated landing strips;

(e) avoids or minimises nuisance or hazard to nearby property owners/occupiers, road users and wildlife by way of:

(i) shadowing, flickering, reflection and blade glint impacts;

(ii) noise;

(iii) interference to television and radio signals;

(iv) modification to vegetation, soils and habitats; and

(v) bird and bat strike.

## Residential Development

### OBJECTIVES

**Objective 1:** Safe, convenient, sustainable and healthy living environments.

**Objective 2:** Preservation and enhancement of the existing character within historic conservation and streetscape character zones and policy areas through contextual design and conservation measures that promotes the retention of buildings and the sensitive re-development, alterations, additions and adaptive re-use of buildings.

**Objective 3:** Higher dwelling densities yielded from sensitive and well designed residential infill and comprehensive residential redevelopment of selected living areas outside those zones or policy areas of identified historic conservation and streetscape character.

**Objective 4:** A diversity of housing to meet the needs and preferences of the community.

**Objective 5:** Residential areas free of incompatible uses and activities.

### PRINCIPLES OF DEVELOPMENT CONTROL

#### Design and Appearance

**1** The design and appearance of buildings and their surrounds should respect the contextual qualities of the locality and be consistent with the desired character for the zone or policy area and therefore should have regard to:

(a) site dimensions and configurations;

(b) street and boundary setbacks;

(c) site coverage;

(d) private and communal open space;

(e) building form, scale, mass and height;

(f) building orientation to public streets;

(g) building facades and detailing;

(h) roof form and pitch;

(i) fences, walls and landscaping;

(j) overlooking and overshadowing;

(k) noise;

(l) access and car parking;

(m) site facilities and storage.

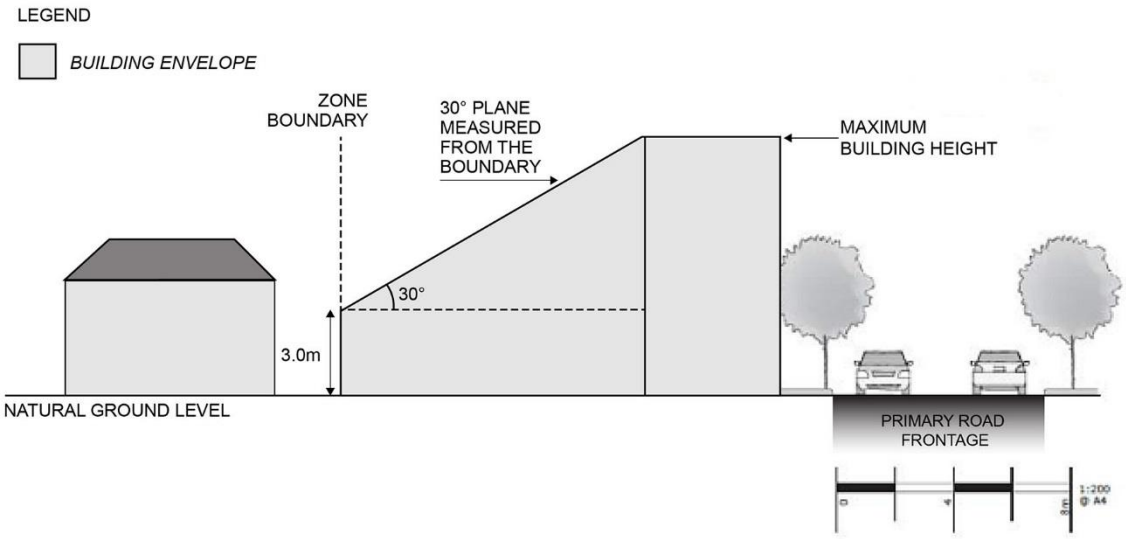
**Building Form, Scale, Mass and Height**

*General*

**23** Building form, scale, mass and height should be compatible with development in the locality and in particular the desired character and built form parameters for the zone or policy area.

**24** Development should be sited and designed to minimize negative visual impacts on existing and potential future land uses that are considered appropriate in the locality.

**25** To minimise impacts at the interface with lower scale sensitive development, buildings of 3 storeys or more (or heights greater than 7 metres) should be constructed within a building envelope provided by a 30 degree plane, measured from a height of 3 metres above ground level (of the adjoining affected land) at the zone or Policy Area boundary (except where this boundary is the primary road frontage), as illustrated in **Figure 1**:




**Overlooking**

**38** Direct overlooking from upper level (above ground floor level) habitable room windows and external balconies, roof patios, terraces and decks to habitable room windows and useable private open space of other dwellings should be minimised through adoption of one or more of the following:

(a) building layout;

(b) location and design of windows, balconies, roof patios and decks;

(c) screening devices;

(d) adequate separation distances;

(e) existing landscaping and supplementary screen tree planting.

**39** To maintain a reasonable level of visual privacy to adjacent residential properties the following measures are sought:

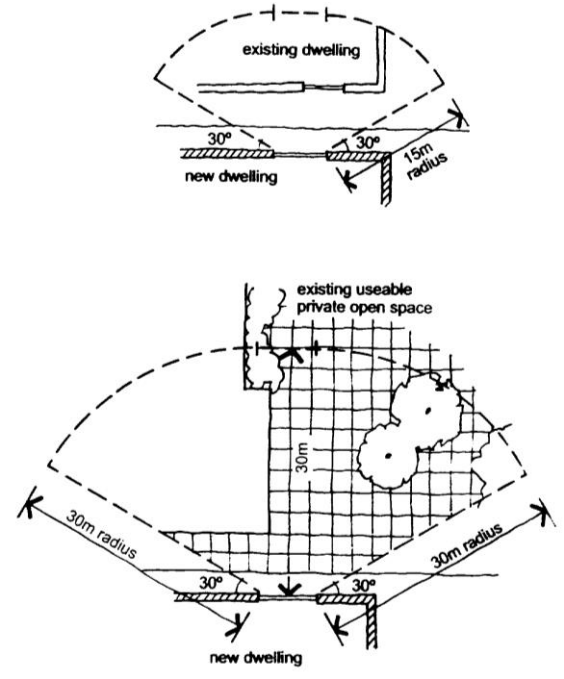
(a) orientate and stagger windows and upper level viewing areas to prevent direct views into adjoining property indoor and outdoor living areas;

(b) obscure viewing by raising window sills or incorporating obscure glass windows to a height at least 1.7 metres above floor level;

(c) use permanently fixed external screening devices such as screens, fences, wing walls, panels, planter boxes or similar measures adequate to restrict 120 degree views;

(d) provide a separation distance of 15 metre radius to windows of habitable rooms in potentially impacted dwellings and 30 metre radius to private open space as described in the Figure below;

(e) incorporate plants capable of providing and seasonally sustaining a privacy screen.




*Area likely to be primarily affected by overlooking from upper level windows, balconies and decks.*

**Overshadowing and Natural Light**

**41** Development should allow direct winter sunlight access to adjacent residential properties and minimise the overshadowing of:

(a) living room windows, wherever practicable;

(b) the majority of private open space areas, communal open space and upper level balconies that provide the primary open space provision;

(c) roof areas, preferably north facing and suitable for the siting of at least 4 solar panels on any dwelling;

or where such affected areas are already shaded, the additional impact should not significantly worsen the available sunlight access.

**42** To ensure an adequate level of daylight and outlook, light wells and similar devices should not be relied on as the primary source of daylight for habitable rooms.

## Transportation (Movement of People and Goods)

**OBJECTIVES**

**Objective 1:** Control the movement of traffic within the city having regard to a hierarchy of roads in order to ensure compatibility between development adjacent to roads and the position of the road in the hierarchy.

The following arterial roads are of primary importance to metropolitan traffic movement:

Anzac Highway;
Cross Road;
Glen Osmond Road;
Greenhill Road; and
South Road.

The following arterial roads supplement the above arterial roads in catering for metropolitan traffic movement, but are of secondary importance to the above roads in this role:

Fullarton Road;
Goodwood Road; and
Unley Road.

The following major collector roads carry a small component of through traffic particularly during peak periods. Traffic restraint is necessary due to the impacts upon adjacent land use arising from through traffic on the road:

Duthy Street;
George Street;
East Avenue/Leah Street/Leader Street; and
King William Road/Northgate Street/Victoria Avenue.

The following roads have a local crossing/collector function in that:

(a) they fulfil a need to subdivide a local traffic area because, in one dimension at least, the area is too large to be reasonably circumnavigated by intra-suburban traffic; and/or

(b) distribute traffic between the arterial roads and the local street system:

Albert Street;
Arthur Street (Unley);
Ferguson Avenue;
Fisher Street;
Forest Avenue;
Mills Street;
Mitchell Street;
Park Street;
Victoria Street; and
Wattle Street.

All other local streets and roads have a main function of providing access to abutting property and are not designed to facilitate through traffic movement.

**Objective 2:** A network of roads, paths and tracks, to accommodate satisfactorily a variety of vehicular, cycle and pedestrian, traffic.

**Objective 3:** A safe and efficient vehicular and pedestrian movement system.

**Objective 4:** Safe and easy movement of pedestrians across arterial roads.

**Objective 5:** A comprehensive, integrated, and efficient, public and private transport system which will:

(a) provide access to adequate transport services for all people, at an acceptable cost;

(b) effectively support the economic development of metropolitan Adelaide and the State;

(c) ensure a high level of safety; and

(d) maintain the options for the introduction of suitable new transport technologies.

**Objective 6:** A compatible arrangement between land uses and the transport system which will:

(a) ensure minimal noise and air pollution;

(b) protect amenity of existing and future land uses;

(c) provide adequate access; and

(d) ensure maximum safety.

**Objective 7:** A form of development adjoining main roads which will:

(a) ensure traffic can move efficiently and safely;

(b) prevent large traffic-generating uses outside designated shopping/centre zones;

(c) provide for adequate off-street parking; and

(d) provide limited and safe points of access and egress.

**Objective 8:** A high degree of visibility at intersections for drivers of motor vehicles entering arterial roads.

**Objective 9:** The retention of all present road reserve widths in the city, other than in respect of arterial roads.

Due to the magnitude of impacts that road widening has upon properties abutting roads affected by these actions, widening of arterial roads should only take place where detailed investigations of both local and regional needs indicate such widening is desirable.

**Objective 10:** Non-local traffic utilizing the arterial road system, and not local streets.

**Objective 11:** Development located and designed to direct traffic away from local crossing/collector roads and local streets, and the improvement of the environment of these classes of streets.

**Objective 12:** A co-ordinated and integrated bicycle movement system which complements other vehicles movement systems.

**Objective 13:** Off-street parking areas able to cater for the demands of existing and proposed development in Office, Mixed Use and Centre Zones.

The main elements of the transport system are shown on Map Un/1 (Overlay 1).

## PRINCIPLES OF DEVELOPMENT CONTROL

### General

**1** Development adjacent to every road and street should conform with the objectives relating to movement of people and goods and be compatible with the hierarchy of roads shown on Map Un/1 (Overlay 1).

**2** Where traffic control works, public works or facilities are required as a direct result of a development, the cost of such works or facilities should be borne by the developer.

**3** Development should:

(a) provide safe and convenient access for private cars, cyclists, pedestrians, service vehicles, emergency vehicles and public utility vehicles;

(b) include access points located and designed in such a way as to minimise traffic hazards, vehicle queuing on public roads and intrusion of vehicles into adjacent residential areas; and

(c) provide off-street loading, service and vehicle manoeuvring areas.

**4** The number, location and design of access points onto the arterial roads shown on Map Un/1 (Overlay 1) should be such as to minimise traffic hazards, queuing on the roads, right turn movements and interference with the function of intersections, junctions and traffic control devices.

### Cycling and Walking

**5** Development should ensure that a permeable street and path network is established that encourages walking and cycling through the provision of safe, convenient and attractive routes with connections to adjoining streets, paths, open spaces, schools, pedestrian crossing points on arterial roads, public and community transport stops and activity centres.

**6** Development should provide access, and accommodate multiple route options, for pedestrians and cyclists by enhancing and integrating with:

(a) open space networks, recreational trails, parks, reserves, and sport and recreation areas;

(b) Adelaide's principal cycling network (Bikedirect), which includes arterial roads, local roads and off-road paths.

**7** New developments should give priority to and not compromise existing designated bicycle routes.

**8** Where development coincides with, intersects or divides a proposed bicycle route or corridor, development should incorporate through-access for cyclists.

**9** Development should encourage and facilitate cycling as a mode of transport by incorporating end-of-journey facilities including:

(a) showers, changing facilities and secure lockers

(b) signage indicating the location of bicycle facilities

(c) bicycle parking facilities provided at the rate set out in Table Un/6 – Off-street Bicycle Parking requirements for Mixed Use, Corridor and District Centre Zones.

**10** On-site secure bicycle parking facilities should be:

(a) located in a prominent place;

(b) located at ground floor level;

(c) located undercover;

(d) located where surveillance is possible;

(e) well lit and well signed;

(f) close to well used entrances;

(g) accessible by cycling along a safe, well lit route.

**11** Pedestrian and cycling facilities and networks should be designed and provided in accordance with relevant provisions of the *Australian Standards and Austroads Guides*.

**Access**

**12** Development should have direct access from an all-weather public road.

**13** Development should be provided with safe and convenient access which:

(a) avoids unreasonable interference with the flow of traffic on adjoining roads

(b) provides appropriate separation distances from existing roads or level crossings

(c) accommodates the type and volume of traffic likely to be generated by the development or land use and minimises induced traffic through over-provision

(d) is sited and designed to minimise any adverse impacts on the occupants of and visitors to neighbouring properties.

**14** Development should not restrict access to publicly owned land such as recreation areas.

**15** The number of vehicle access points onto arterial roads shown on Strategic Transport Routes Map Un/1 (Overlay 4) should be minimised and, where possible, access points should be:

(a) limited to local roads (including rear lane access)

(b) shared between developments.

**16** Development with access from arterial roads or roads as shown on Strategic Transport Routes Map Un/1 (Overlay 4) should be sited to avoid the need for vehicles to reverse onto or from the road.

**17** Structures such as canopies and balconies that encroach onto the footpath of an arterial road should not cause visual or physical obstruction to:

(a) signalised intersections

(b) heavy vehicles

(c) street lighting

(d) overhead electricity lines

(e) street trees

(f) bus stops.

**18** Driveways, access tracks and parking areas should be designed and constructed to:

(a) follow the natural contours of the land

(b) minimise excavation and/or fill

(c) minimise the potential for erosion from surface runoff

(d) avoid the removal of existing vegetation

(e) be consistent with Australian Standard AS 2890 Parking facilities.

**Parking Area - Design, Location and Provision**

**19** Development should provide sufficient off-street parking to accommodate resident, visitor, customer, employee, and service vehicles.

**20** Off-street vehicle parking should be in accordance with Table Un/5 Off Street Vehicle Parking Requirements.

**21** Car parking areas should:

(a) be located and designed in such a way as to ensure safe and convenient pedestrian access from vehicles to facilities; safe and convenient traffic circulation; include adequate provision for manoeuvring into and out of parking bays, and, in the case of centre-type development, result in minimal conflict between customer and service vehicles; and

(b) be designed so as to obviate the necessity for vehicles to back onto public roads.

**22** Individual parking areas should, wherever possible, be so located and designed that:

(a) vehicular movement between them does not require the use of public roads; and

(b) the number of access points is minimised.

**23** Development should provide the opportunity for the shared use of car parking and integration of car parking areas with adjacent development so as to reduce the total extent of car parking areas.

**24** Development providing 25 or more car parking spaces should provide at least one car parking space in every 25 spaces for the use of the disabled, up to a maximum of five spaces. (See Table Un/5).

**25** Parking for the disabled should be allocated and located within a short distance and convenient to major building entrances, ramps and other pedestrian access facilities useable by disabled people.

**Vehicle Parking for Mixed Use, Corridor and District Centre Zones**

**26** Development should provide off-street vehicle parking and specifically marked accessible car parking places to meet anticipated demand.

**27** Loading areas and designated parking spaces for service vehicles should:

(a) be provided within the boundary of the site;

(b) not be located in areas where there is parking provided for any other purpose.

**28** Vehicle parking spaces and multi-level vehicle parking structures within buildings should:

(a) enhance active street frontages by providing land uses such as commercial, retail or other non-car park uses along ground floor street frontages;

(b) complement the surrounding built form in terms of height, massing and scale;

(c) incorporate facade treatments along major street frontages that are sufficiently enclosed and detailed to complement neighbouring buildings consistent with the desired character of the locality.

**29** In mixed use buildings, the provision of vehicle parking may be reduced in number and shared where the operating hours of commercial activities complement the residential use of the site.

**Undercroft and Below Ground Garaging and Parking of Vehicles**

**30** Undercroft and below ground garaging of vehicles should only occur where envisaged in the relevant zone or policy area or precinct and ensure:

(a) the overall height and bulk of the undercroft structure does not adversely impact on streetscape character of the locality or the amenity of adjacent properties;

(b) vehicles can safely enter and exit from the site without compromising pedestrian or cyclist safety or causing conflict with other vehicles;

(c) driveway gradients provide for safe and functional entry and exit;

(d) driveways and adjacent walls, fencing and landscaping are designed to provide adequate sightlines from vehicles to pedestrians using the adjacent footpath;

(e) openings to undercroft areas are integrated with the main building so as to minimise visual impact;

(f) landscaping, mounding and/or fencing is incorporated to improve its presentation to the street and to adjacent properties;

(g) the overall streetscape character of the locality is not adversely impaired (e.g. visual impact, building bulk, front setbacks relative to adjacent development).

**31** In the case of undercroft and below ground car parks where cars are visible from public areas, adequate screening and landscaping should be provided.

**Parking Area - Screening and Landscaping**

**32** Landscaping should be provided and maintained in order to screen, shade and enhance the appearance of car parking areas. To this end, grade level car parking areas should not be located closer than two metres to the street alignment and 1.2 metres to the common boundary of adjoining property located within a residential zone.

**33** To allow for adequate landscaping and screening, below ground level parking areas should:

(a) be set-back from property boundaries a distance which is the lesser of the building set-back or:

(i) in the case of the primary road frontage, six metres;

(ii) in the case of the secondary road frontage, three metres; and

(iii) in the case of other boundaries, two metres;

(b) ensure that the finished ground floor level of the building does not exceed a height of 1.3 metres, when measured from the lowest point of existing natural ground level on the site;

(c) incorporate earth mounding or raised ground levels in the landscaping areas and/or screening structures adjacent to any opening between ground level and the underside of the building; and

(d) be designed to comply with Australian Standard 2890.1 (Off Street Parking).

## Waste

### OBJECTIVES

**Objective 1:** Development that, in order of priority, avoids the production of waste, minimises the production of waste, re-uses waste, recycles waste for re-use, treats waste and disposes of waste in an environmentally sound manner.

**Objective 2:** Development that includes the treatment and management of solid and liquid waste to prevent undesired impacts on the environment including, soil, plant and animal biodiversity, human health and the amenity of the locality.

### PRINCIPLES OF DEVELOPMENT CONTROL

**1** Development should be sited and designed to prevent or minimise the generation of waste (including wastewater) by applying the following waste management hierarchy in the order of priority as shown below:

(a) avoiding the production of waste;

(b) minimising waste production;

(c) reusing waste;

(d) recycling waste;

(e) recovering part of the waste for re-use;

(f) treating waste to reduce the potentially degrading impacts;

(g) disposing of waste in an environmentally sound manner.

**2** The storage, treatment and disposal of waste materials from any development should be achieved without risk to health or impairment of the environment.

**3** Development should avoid as far as practical, the discharge or deposit of waste (including wastewater) onto land or into any waters (including processes such as seepage, infiltration or carriage by wind, rain, sea spray, stormwater or by the rising of the water table).

**4** Untreated waste should not be discharged to the environment, and in particular to any water body.

**5** Development should include appropriately sized area to facilitate the storage of receptacles that will enable the efficient recycling of waste.

**6** Development that involves the production and/or collection of waste and/or recyclable material should include designated collection and storage area(s) that are:

(a) screened and separated from adjoining areas;

(b) located to avoid impacting on adjoining sensitive environments or land uses;

(c) designed to ensure that wastes do not contaminate stormwater or enter the stormwater collection system;

(d) located on an impervious sealed area graded to a collection point in order to minimise the movement of any solids or contamination of water;

(e) protected from wind and stormwater and sealed to prevent leakage and minimise the emission of odours;

(f) stored in such a manner that ensures that all waste is contained within the boundaries of the site until disposed of in an appropriate manner.

# OVERLAYS

## Overlay – Affordable Housing

Refer to Map Un/1 (Overlay 5) that relates to this overlay. The following policies apply to the 'designated area' marked on the relevant Overlay Map.

### INTERPRETATION

Where the Objectives and/or Principles of Development Control that apply in relation to this overlay are in conflict with the relevant General Objectives and/or Principles of Development Control in the Development Plan, the overlay will prevail.

### OBJECTIVES

**Objective 1:** Affordable housing that is integrated into residential and mixed use development.

**Objective 2:** Development that comprises a range of affordable dwelling types that caters for a variety of household structures.

### PRINCIPLES OF DEVELOPMENT CONTROL

**1** Development comprising 20 or more dwellings should include a minimum of 15 percent affordable housing (as defined by the *South Australian Housing Trust Regulations 2010* as amended).

## Overlay – Strategic Transport Routes

Refer to Map Un/1 (Overlay 4) that relates to this overlay. The following policies apply to the 'designated area' marked on the relevant Overlay Map.

### INTERPRETATION

Where the Objectives and/or Principles of Development Control that apply in relation to this overlay are in conflict with the relevant General Objectives and/or Principles of Development Control in the Development Plan, the overlay will prevail.

### OBJECTIVES

**Objective 1:** Development that recognises the importance of strategic transport routes and does not impede traffic flow or create hazardous conditions for pedestrians, cyclists or drivers of vehicles, including emergency services vehicles.

### PRINCIPLES OF DEVELOPMENT CONTROL

**1** Development adjacent to a strategic transport route should:

(a) avoid the provision of parking on the main carriageway;

(b) be accessible via service roads, where possible, that provide:

(i) parking off the main carriageway;

(iii) a buffer from the main carriageway for pedestrian and cycle activity;

(c) not impede the potential for overhead cabling and associated infrastructure to be established in an existing or proposed tram corridor.

**2** Vehicular site access should not be provided along the main street frontage where an alternative access is available.

**3** Development adjacent kerbside bus stops should be set back to provide sufficient space for indented bus bays with associated hard stand area, shelter and a 1.2 metre wide continuous accessible path behind the bus shelter.

## Overlay – Noise and Air Emissions

Refer to Maps Un/1 (Overlay 3) and (Overlay 3A) that relate to this overlay. The following policies apply to the 'designated area' marked on the relevant Overlay Map.

### INTERPRETATION

Where the Objectives and/or Principles of Development Control that apply in relation to this overlay are in conflict with the relevant General Objectives and/or Principles of Development Control in the Development Plan, the overlay will prevail.

### OBJECTIVES

**Objective 1:** Protect community health and amenity from adverse impacts of noise and air emissions.

### PRINCIPLES OF DEVELOPMENT CONTROL

**1** Noise and air quality sensitive development located adjacent to high noise and/or air pollution sources should:

(a) shield sensitive uses and areas through one or more of the following measures:

(i) placing buildings containing less sensitive uses between the emission source and sensitive land uses and areas;

(ii) within individual buildings, place rooms more sensitive to air quality and noise impacts (e.g. bedrooms) further away from the emission source;

(iii) erecting noise attenuation barriers provided the requirements for safety, urban design and access can be met;

(b) use building design elements such as varying building heights, widths, articulation, setbacks and shapes to increase wind turbulence and the dispersion of air pollutants provided wind impacts on pedestrian amenity are acceptable;

(c) locate ground level private open space, communal open space and outdoor play areas within educational establishments (including childcare centres) away from the emission source.